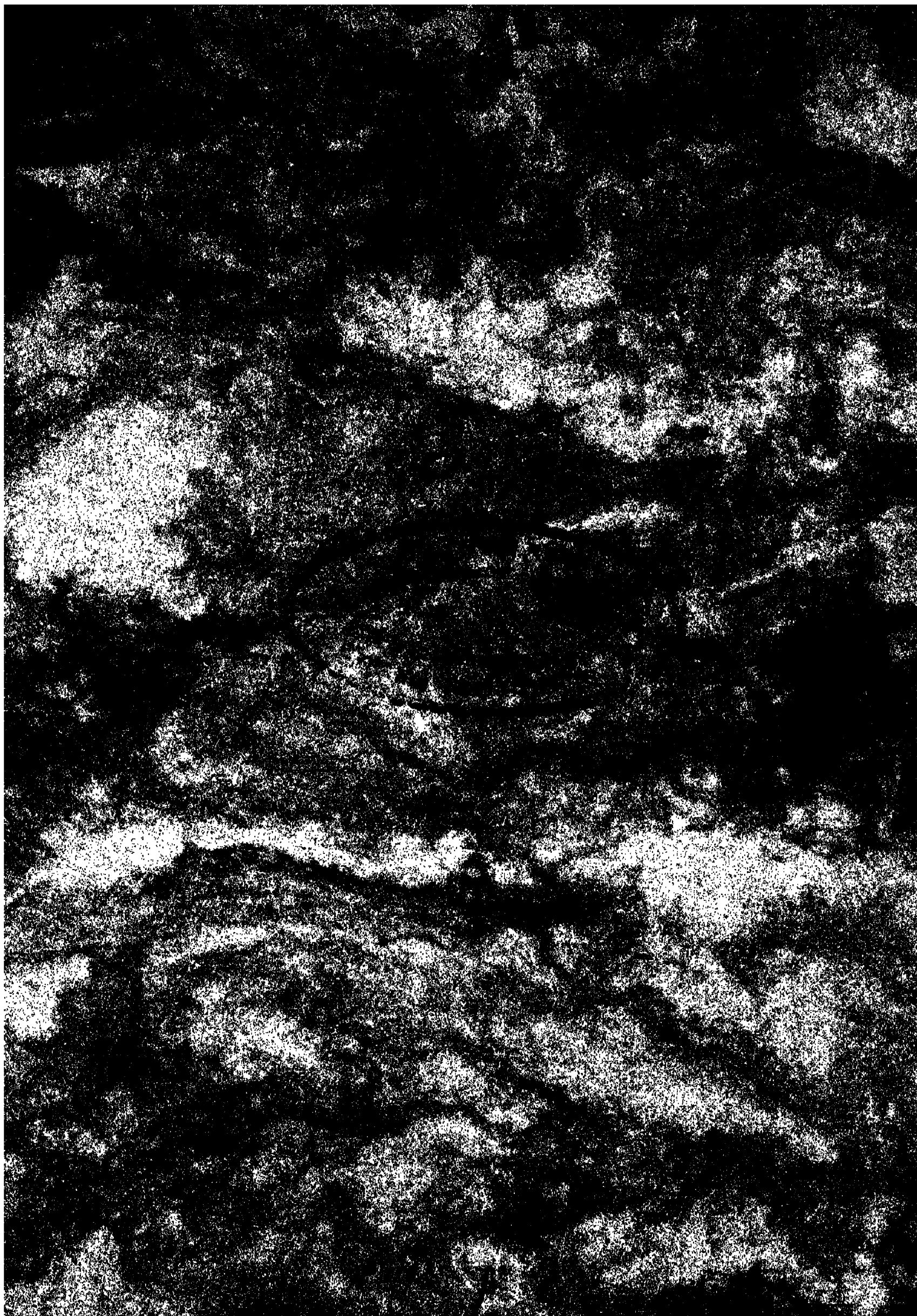
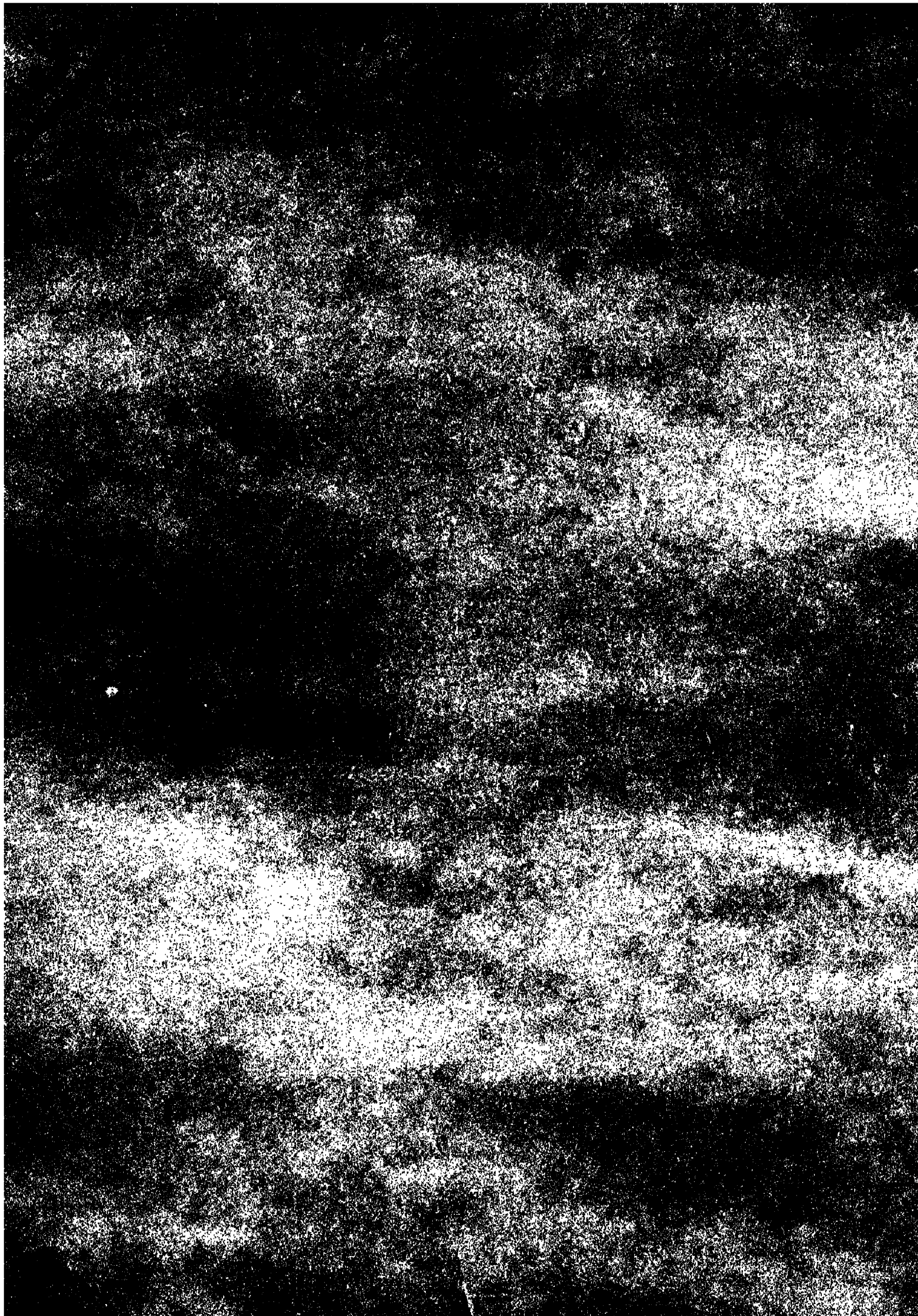


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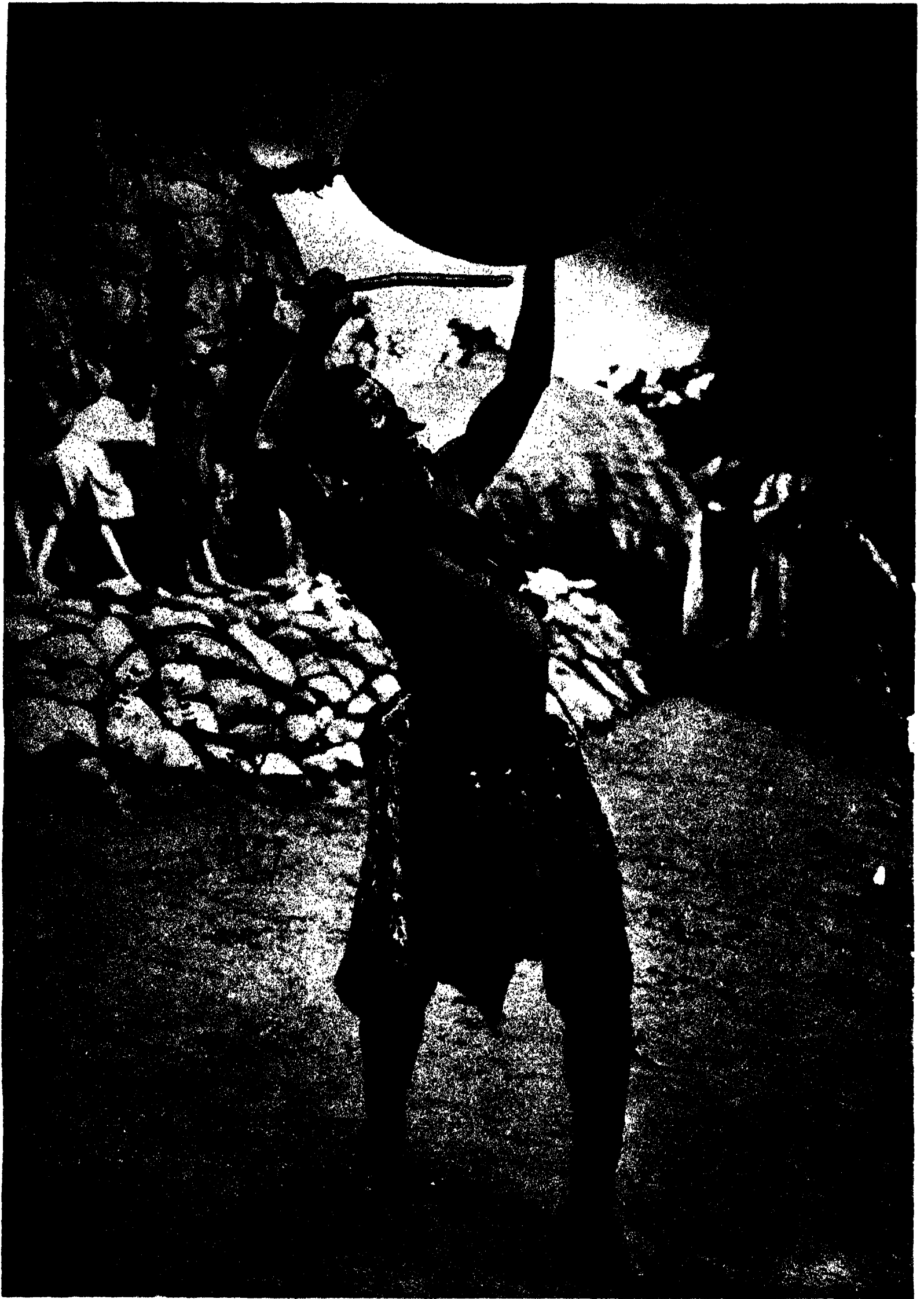
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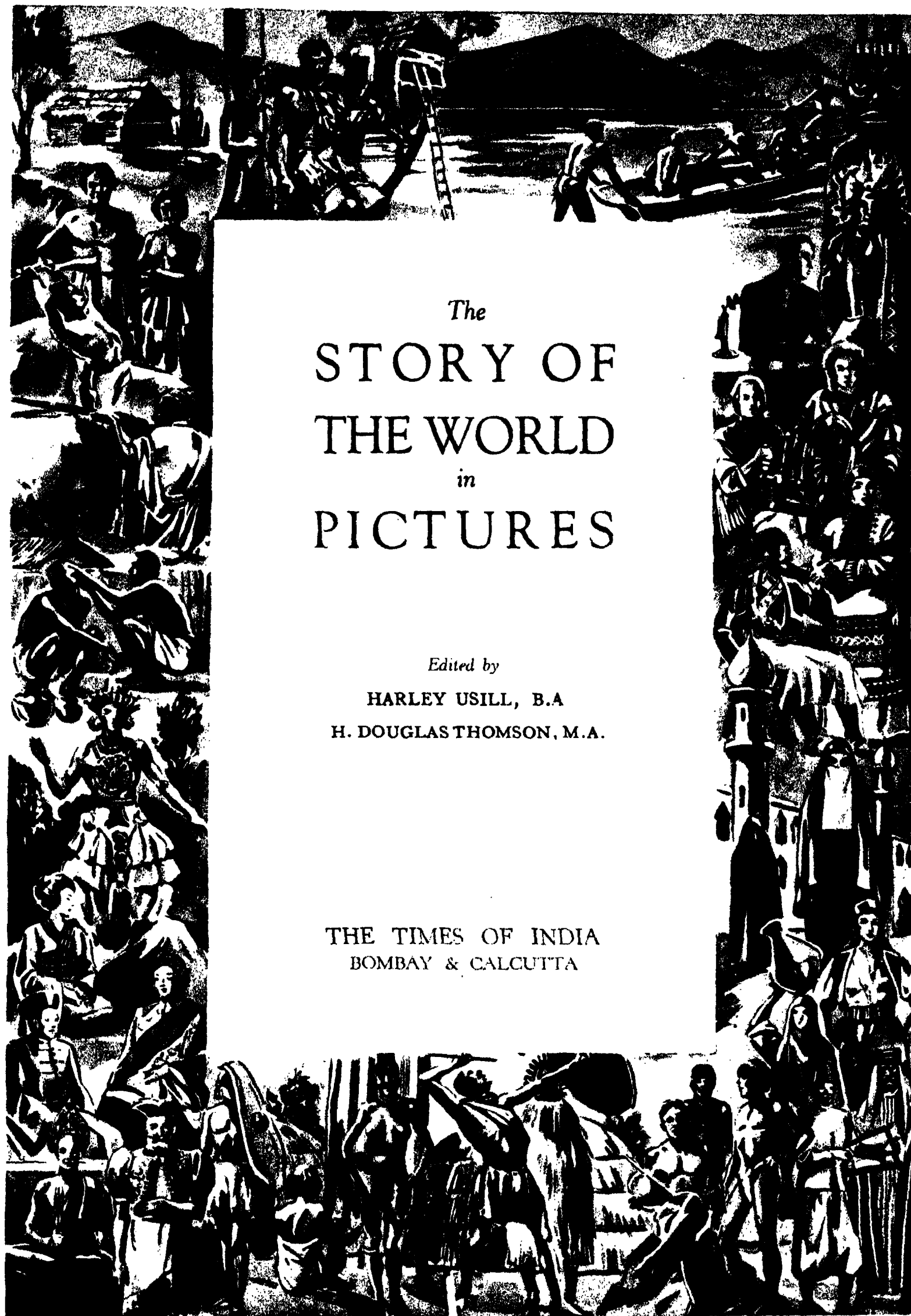
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T H E W O R L D
in
P I C T U R E S



E.N.A.

THE RAIN-MAKER INVOKES HIS GODS

The magician of a Zulu village calls to heaven for rain to save his people and their lands from the agony of thirst.



The
STORY OF
THE WORLD
in
PICTURES

Edited by
HARLEY USILL, B.A.
H. DOUGLAS THOMSON, M.A.

THE TIMES OF INDIA
BOMBAY & CALCUTTA

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CONTENTS

PREFACE.....	7
THE MIGHTY PAGEANTRY OF NATURE.....	9
THE HOME OF MANKIND.....	33
1. Life in the Hot Wet Forests.....	35
2. The Hot Grass Lands.....	43
3. In the Lands of the Monsoon.....	51
4. Lands of Sandstorms and Oases.....	57
5. Lands of Sunshine and Deep Blue Skies.....	63
6. Life in the Prairie Lands.....	69
7. Where the Leaves fall in Winter.....	73
8. Life in the Dense Northern Forests.....	77
9. Life in the Cold Deserts.....	85
10. The Land of Ice and Snows.....	89
11. The Ocean of a Thousand Isles.....	93
12. The Roof of the World.....	97
RACES AND PEOPLES.....	101
HOW MAN FEEDS HIMSELF.....	123
THE SCIENTIFIC PRODUCTION OF FOOD.....	157
WHAT MAN WEARS.....	163
HOW MAN SHELTERS HIMSELF.....	189
TOWNS AND CITIES.....	213
WHAT MAN IS BUILDING.....	241
NATURE VERSUS MAN.....	249
MAN VERSUS NATURE.....	263
RELIGIONS OF THE WORLD.....	277
WHAT THE DOCTOR IS DOING.....	293
TRAVEL AND TRANSPORT ROUND THE WORLD.....	301
HIGHWAYS OF THE WORLD.....	335
HOW MAN TALKS TO MAN.....	343
MAN'S TRADE AND INDUSTRY.....	355
WHAT MAN DIGS FROM THE EARTH.....	391
THE HARNESSING OF POWER.....	407
THE MACHINERY OF BUSINESS.....	415
MAN THE ARTIST.....	423
MUSIC--THE UNIVERSAL LANGUAGE.....	439
DANCES OF MANY LANDS.....	453
LITERATURE.....	475
THE THEATRE.....	483
THE CINEMA.....	497
BROADCASTING.....	507
LAW AND ORDER.....	515
SCHOOLS OF TO-DAY.....	527
MANKIND AT PLAY.....	547
WHAT MAN HAS LEFT BEHIND.....	569
EXPLORING THE UNKNOWN.....	581
MAN LOOKS AT OTHER WORLDS.....	601

PREFACE

TO see the world—the desire and ambition of all, the privilege of the few. And yet, were a man fortunate enough to spend the whole of his life in happily wandering over the face of the earth, he would be lucky to see as much as we see in this book.

Our forefathers listened breathless to travellers' tales of men with but a single eye in the middle of the forehead, of fire-breathing basilisks, of mermaid sirens. We can see here more and greater wonders still, the wonders of truth ever stranger than fiction from real countries quite as romantic as those "fabled isles of ancient story."

"FROM CHINA TO PERU"

How marvellous is the power of the picture! In one brief glance we learn as much as a score of learned books could tell us. Here, indeed, "we survey mankind from China to Peru." Few are the phases of life and achievement that are not shown. Here we are not bound by the necessity of following the beaten paths of civilisation; we can penetrate where no white man has trod, we can scale the highest peaks, cross the wildest torrents, loiter by sun-drenched beaches, traverse the barren Arctic wastes.

Here are priceless photographs to take which men have risked their lives and spent their fortunes. The world's treasures of wonders have been ransacked for them.

UNFOLDING THE DAILY LIFE OF MANKIND

Here are pictures which make plain to the youngest of us the intricate mysteries of science and industry. Here are man's highest achievements in art and architecture, his greatest triumphs over untamed Nature. We follow him to his daily vocations, join him in his pleasures, witness his religious exercises—not in one small corner of the globe only, but over the whole of it. We know the problems that beset him when he is solitary and when he is one of millions in some vast city. In these pictures is told the daily life of all mankind, and the world's story is unfolded before our eyes in a continuous pageant of splendour and solitude, of majesty and mystery.

MAN'S FIGHT AGAINST THE POWERS OF NATURE

The book has been planned to show how the world presents us with a number of set scenes or "regions" which man, even with all the resources of modern science at his command, is unable to modify to any appreciable extent. Some of these are far less suited than others to human habitation and enterprise. Amongst the regions unfavourable to human development are the great equatorial forests where, in conditions of extreme heat and moisture, trees fight to light and air; the sun-baked arid wastes of the deserts, where there is little or no rain at all; and the even more

PREFACE

barren wastes of uninhabited polar snow and ice where extreme cold puts an end to all vegetable life.

Elsewhere more favourable conditions have encouraged denser population and advanced forms of civilisation. Therefore, since man's subsequent development is so largely governed by the conditions under which Nature compels him to live, we shall, at the outset, give our attention to the fascinating series of pictures showing man living in varying circumstances and stages of civilisation in all parts of the world.

On the world stage, or rather, series of stages, 2,000,000,000 men and women rehearse and play their parts under the more or less relentless direction of a producer represented by the forces of Nature. In this connection we shall have to speak of "Nature versus man" and "man versus Nature"; the first result of the struggle will always be, not a complete victory for either one side or the other, but some form of co-operation, that is, of the adjustment of human existence to the conditions of the environment. And for the last result—no one shall say what that may be.

THE PROGRESS OF MANKIND

To set out a complete account of all the scenes and acts in the drama of modern life, either primitive or civilised, would require a whole library of volumes each larger than this. What we have done, chiefly by means of pictures, is to show man first as an animal in search of his primal necessity, food. We then show how he satisfies his other animal desires for clothing and shelter. We shall see him, at least in civilised countries, more or less in control of the world's material resources, no longer the slave of Nature, but himself become one of the greatest of natural forces. We can examine the kinds of power that he employs in a wide range of industry, the products of that industry and the means by which he distributes those products to all parts of the world.

In our account of his towns and cities, of his adoption of the restrictions of law in his daily life, and his attempts to adopt them in the regulation of his international contacts, we shall see him as a social animal, living with his fellows, in need of mutual understanding and confidence.

Finally, he is a thinking animal with interests not only in physical and social activities, but with a keen enjoyment of intellectual pursuits as well. As an idealist, as a searcher for a future as well as an explorer of the present world, and with religious beliefs of widely different character and value, he has sought for the expression of his higher impulses in art, music, literature, drama and science. We present you, therefore, with typical and characteristic scenes and episodes from the entire and thrilling drama of human life.

So mighty a theme, surely, deserves an overture, so—by way of prelude—we present a variety of scenes depicting the manifold beauties—the changing moods and the dynamic power of Nature that beggar all description. It is against this wonderful background that the story of the human race is being eternally enacted.

The MIGHTY PAGEANTRY *of* NATURE



ACROSS THE SUNLIT WATERS OF JAVA A VOLCANO BURSTS INTO ERUPTION

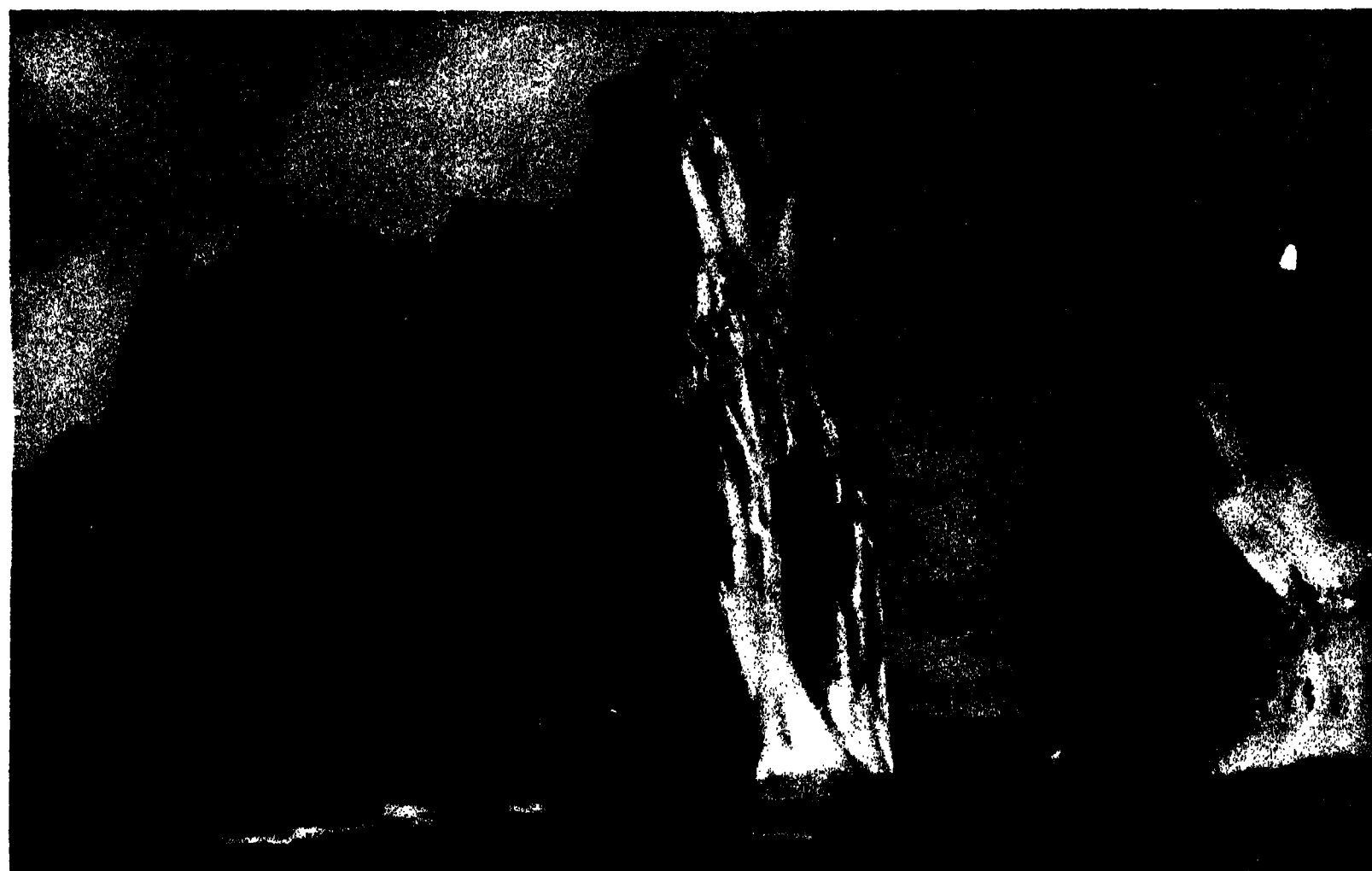
E.N.A.

NATURE IN TREACHEROUS MOODS



BEAUTY THAT DRIVES TO DESPAIR—A MIRAGE IN THE SAHARA

E.N.A.



THE DRIFTING TERROR OF THE NORTHERN SEAS—NEWFOUNDLAND ICEBERGS

E.N.A.

FROM MOUNDS TO MOUNTAINS OF ICE



WHERE A FALSE STEP SPELLS DEATH—ICE HUMMOCKS OF THE ARCTIC

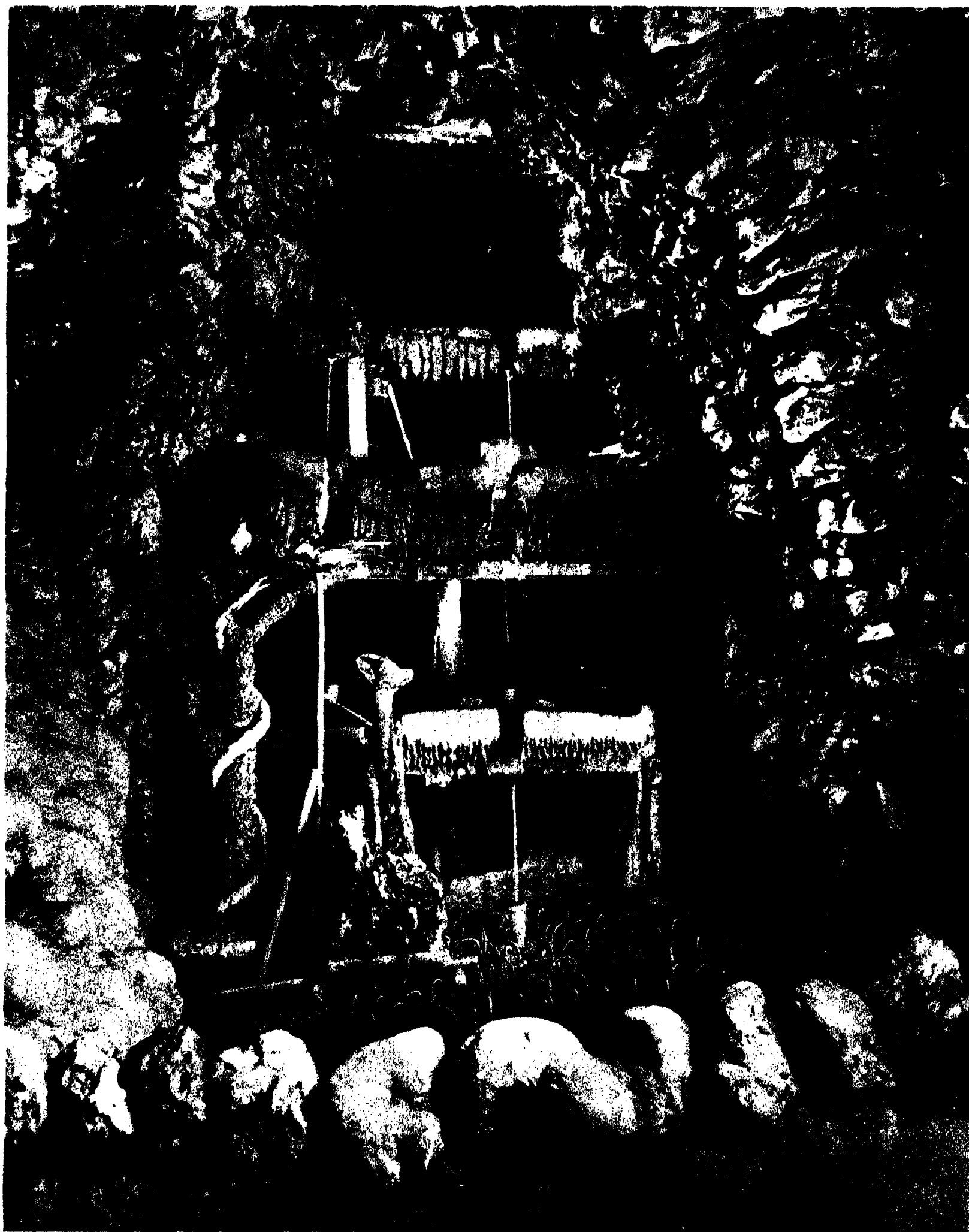
E.N.A.



THE TOWERING WALLS OF THE ROSS ICE BARRIER OF THE ANTARCTIC

E.N.A.

NATURE'S FAIRYLAND OF STONE



E.N.A.

THE CLERMONT-FERRAND'S PETRIFYING FOUNTAINS

Snakes, dogs, birds—in fact everything is turned to stone in this famous French petrifying fountain.

WHERE RAINBOWS DANCE ON GLITTERING MIST

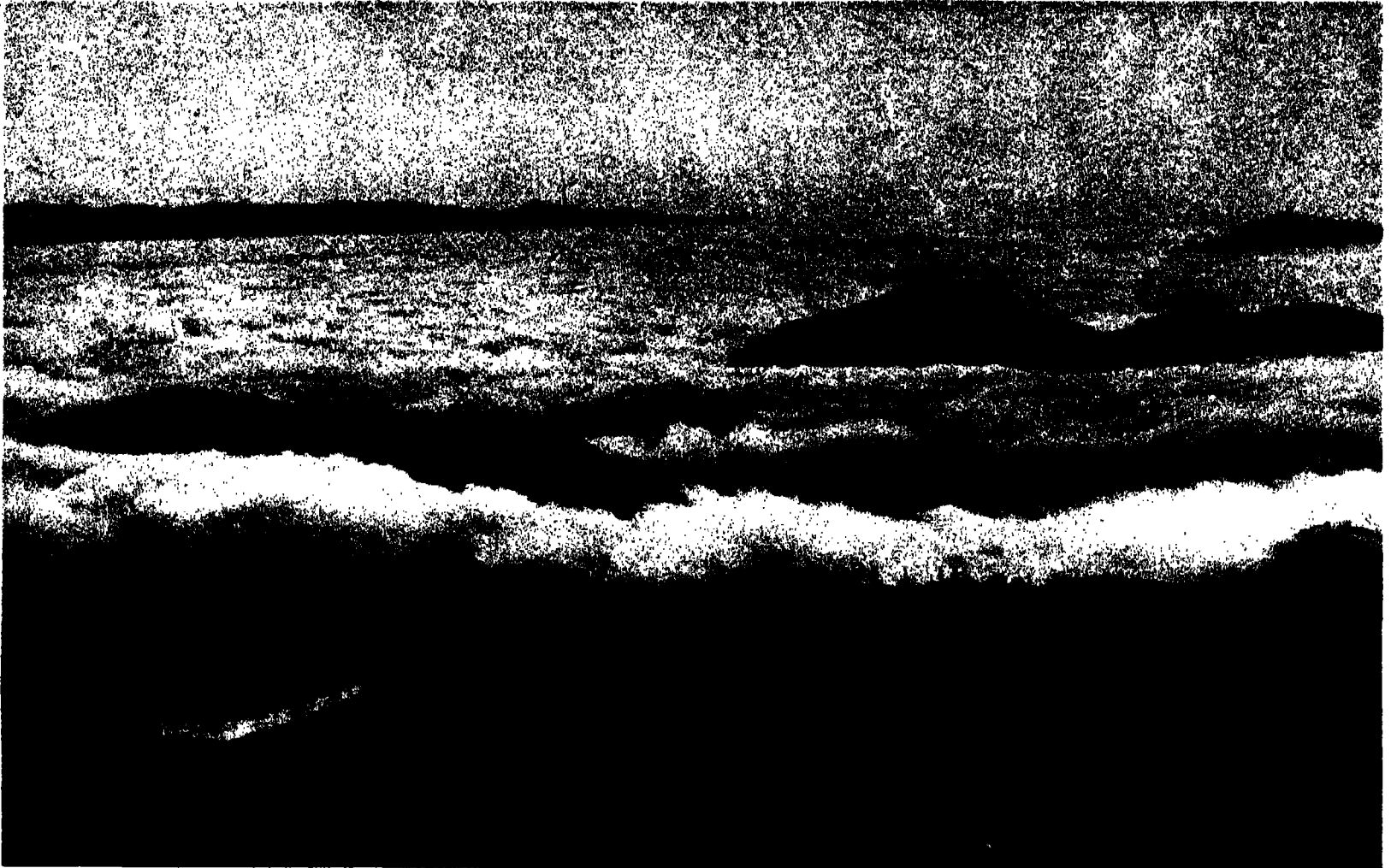


Courtesy, Southern Rhodesia

THE BEAUTIFUL VICTORIA FALLS—SOUTHERN RHODESIA

The power of this mighty torrent of falling water is sufficient to create enough electricity to light many cities.

STORM AND SUNSHINE ON THE HIMALAYAS



A SEA OF CLOUDS FOAM-LASHED BY THE HIGH WINDS

E.N.A.



DAWN BREAKS INTO SUNSHINE ON THE LOWER SLOPES

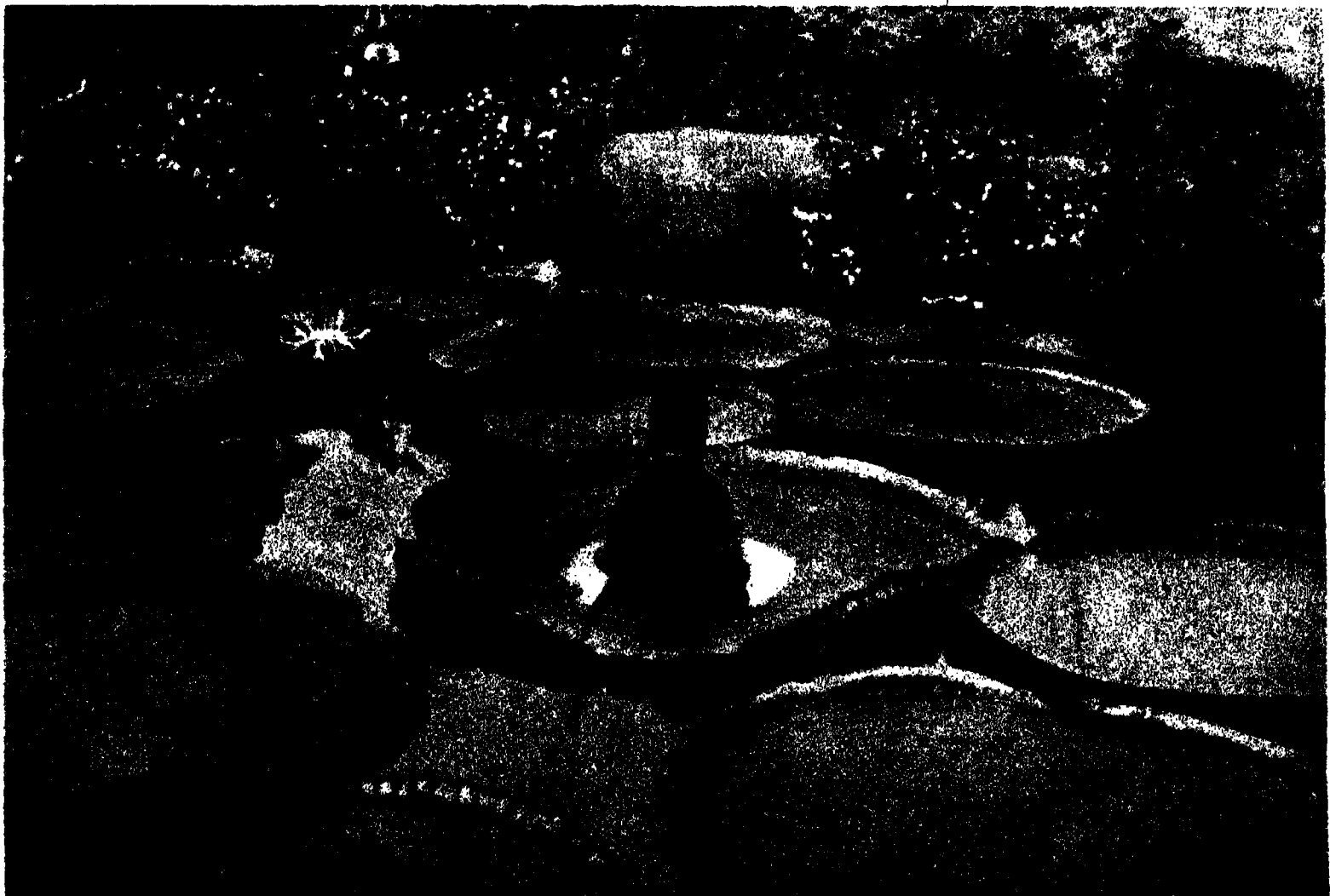
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TWO OF NATURE'S CRADLES



E.N.A.

THE CRADLE OF THE SACRED GANGES—A CAVERN WHENCE THE HOLY RIVER FLOWS



E.N.A.

A MADRAS BABY FLOATS ON WATER-LILY LEAVES OF FANTASTIC SIZE

NATURE LETS OFF STEAM



Courtesy, N.Z. Govt.

SCALDING WATER BURSTS OUT OF THE EARTH—A NEW ZEALAND GEYSER



E.N.A.

A 200-FT. FLAME FLARE OF BURNING GAS—A NATURAL GAS-WELL, CANADA

NATURE'S OWN DISPENSARIES



E.N.A.

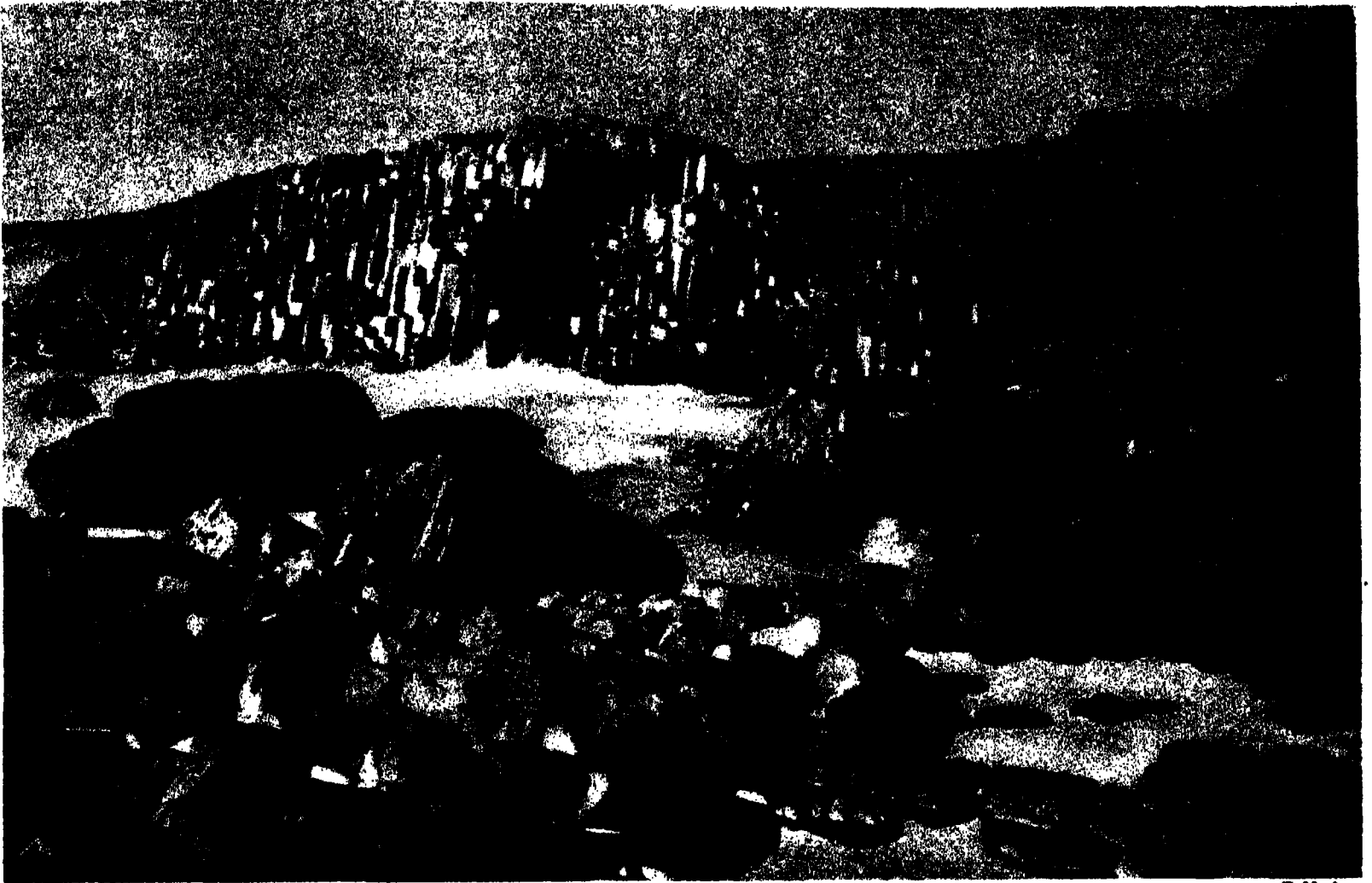
BOILING WATERFALLS OF LIME AND SALT—ALGERIA



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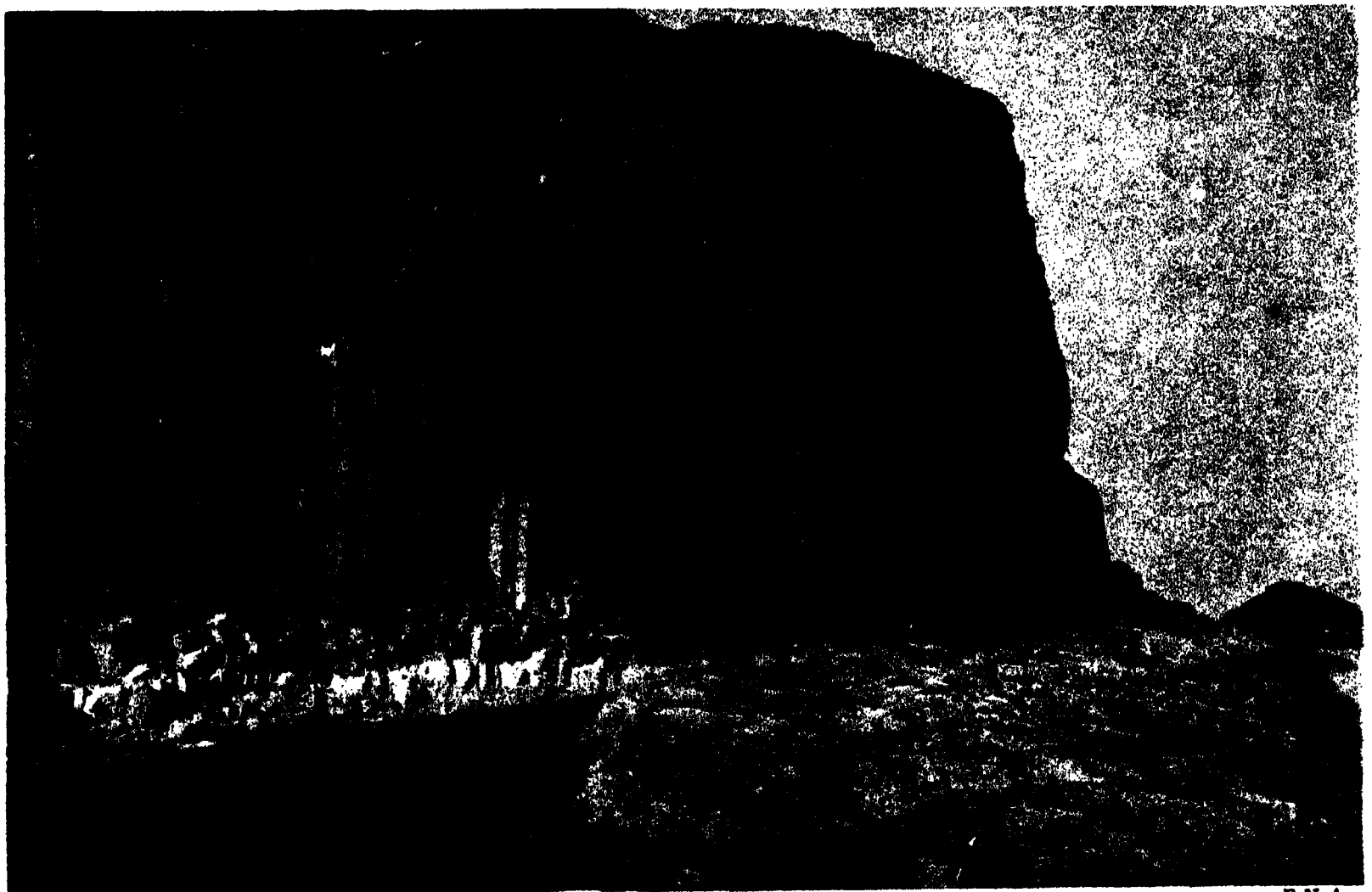
FIVE MILES OF CARBONATE OF SODA—MAGADI LAKE, KENYA

NATURE AS MASTER ARCHITECT



E.N.A.

FASHIONED FOR THE TREAD OF SUPER MEN—THE GIANT'S CAUSEWAY, IRELAND



E.N.A.

THE MYSTIC GRANDEUR THAT INSPIRED MENDELSSOHN—FINGAL'S CAVE

FAIRY SNOW SCENE



Courtesy, Swedish Travel Assn.

THE GLITTERING TRACERY OF SNOW IN A SWEDISH PARK

THE PLASH OF COOL CASCADES



THE INSPIRING GERSOPPA FALLS IN NORTH KANARA, INDIA

E.N.A.

PILLARS AND PALACES OF STONE



EXTRAORDINARY EARTH PILLARS IN UTAH CAUSED BY EROSION

E.N.A.



TIME HAS CARVED THIS PALACE OUT OF THE ROCKS AT UTAH

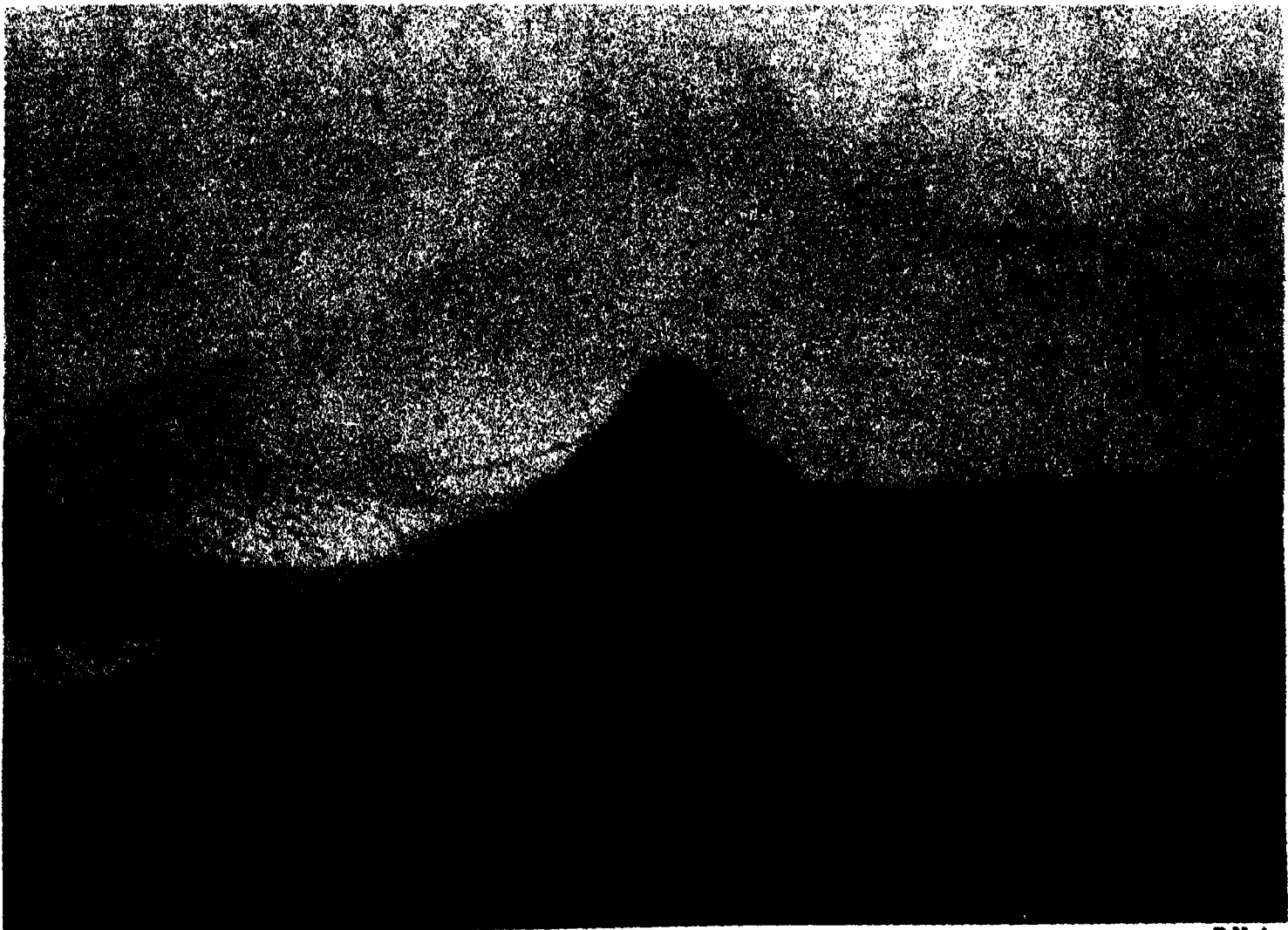
E.N.A.

SPECTRE AND SHADOW



THE SPECTRE OF THE BROCKEN, PHOTOGRAPHED FOR THE FIRST TIME

E.N.A.



THE PHANTOM PYRAMID ON ADAM'S PEAK, CEYLON

E.N.A.

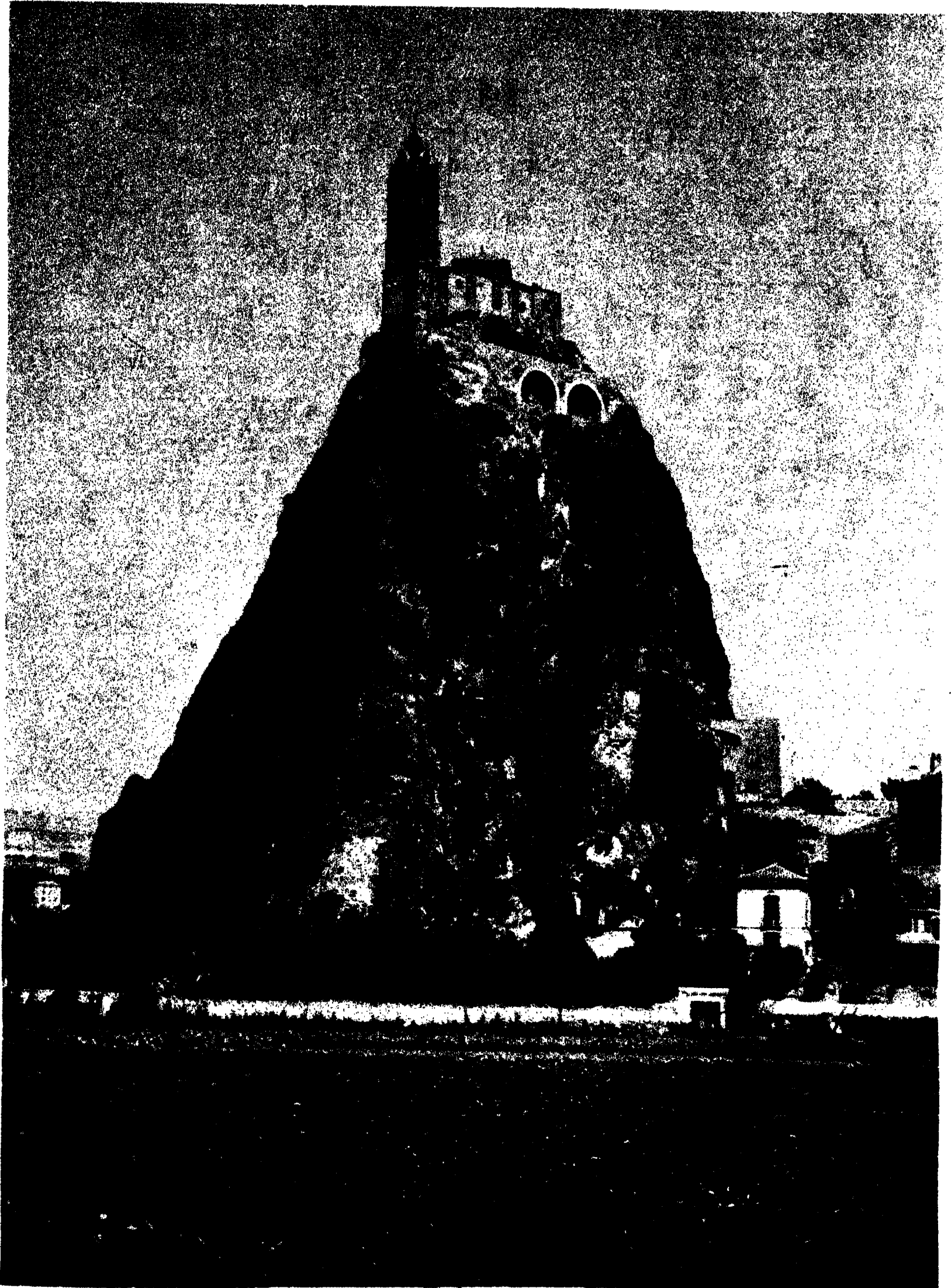
BUSY BUILDERS OF THE INSECT WORLD



THE EXTRAORDINARY ANTHILLS OF NORTHERN AUSTRALIA

E.N.A.

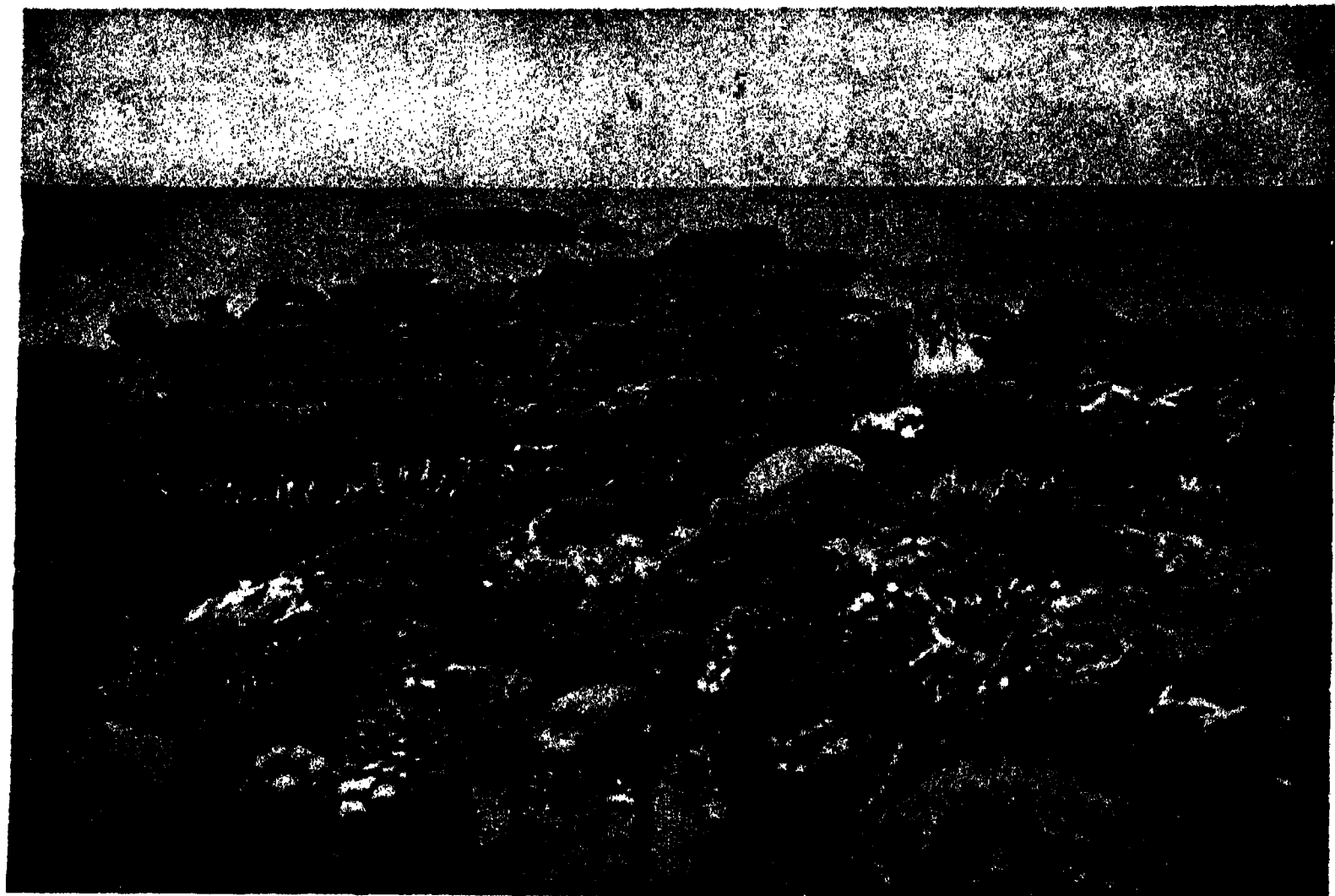
A CHURCH IN THE CLOUDS



A CHURCH FOUNDED ON A ROCK—LE ROCHER D'AIGUILLE, FRANCE

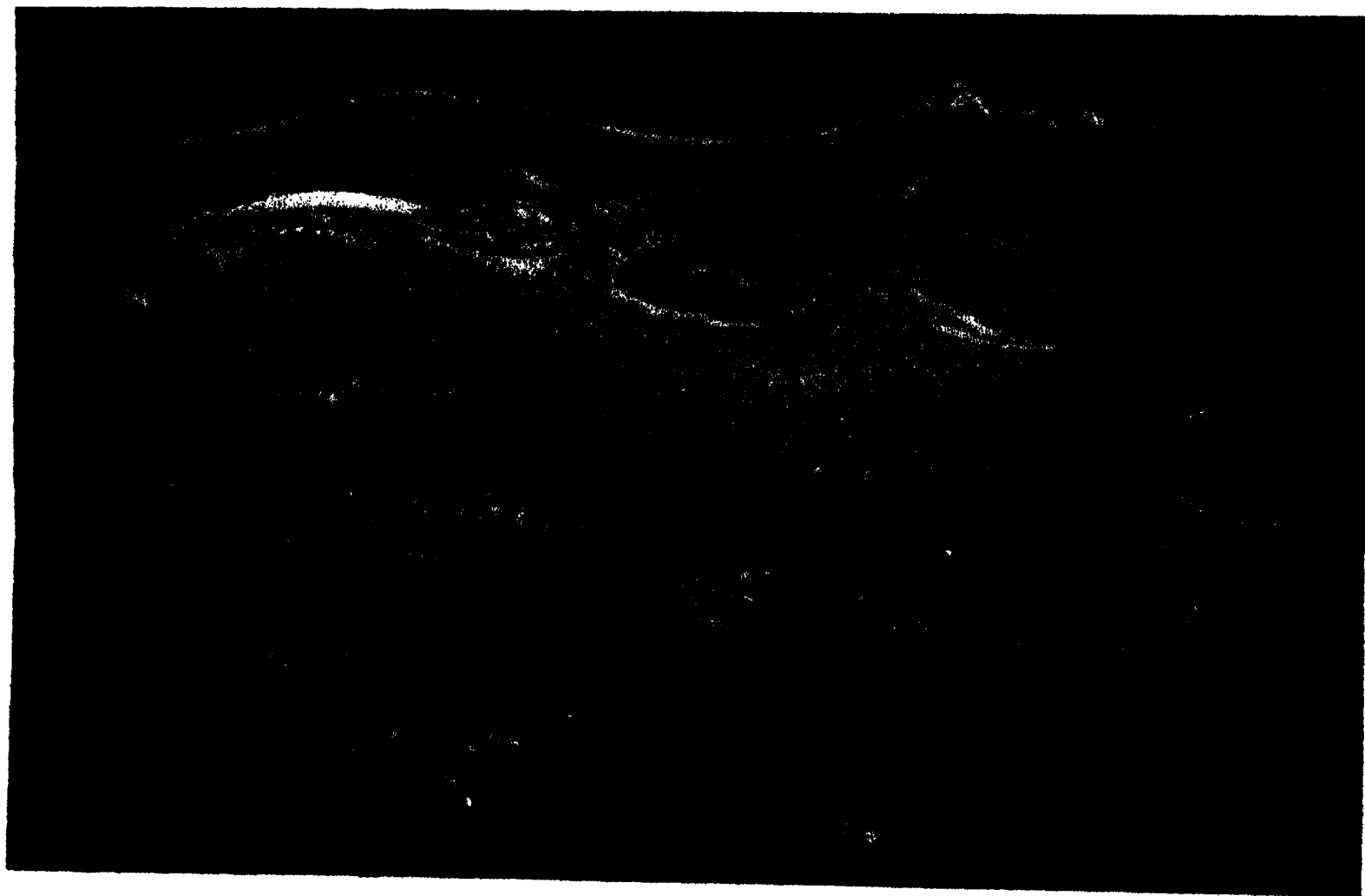
E.N.A.

CORAL BED AND MUD CRATER



AUSTRALIA'S CORAL STRAND—A VIEW OF THE CRESCENT REEF

E.N.A.



A BUBBLING CRATER OF A NEW ZEALAND MUD VOLCANO

E.N.A.

STEAMING LAKE AND JUNGLE POOL



A NATURAL LAKE OF BOILING WATER—CALIFORNIA

E.N.A.



THE GREEN CAVERNS OF THE JUNGLE—BRAZIL

E.N.A.

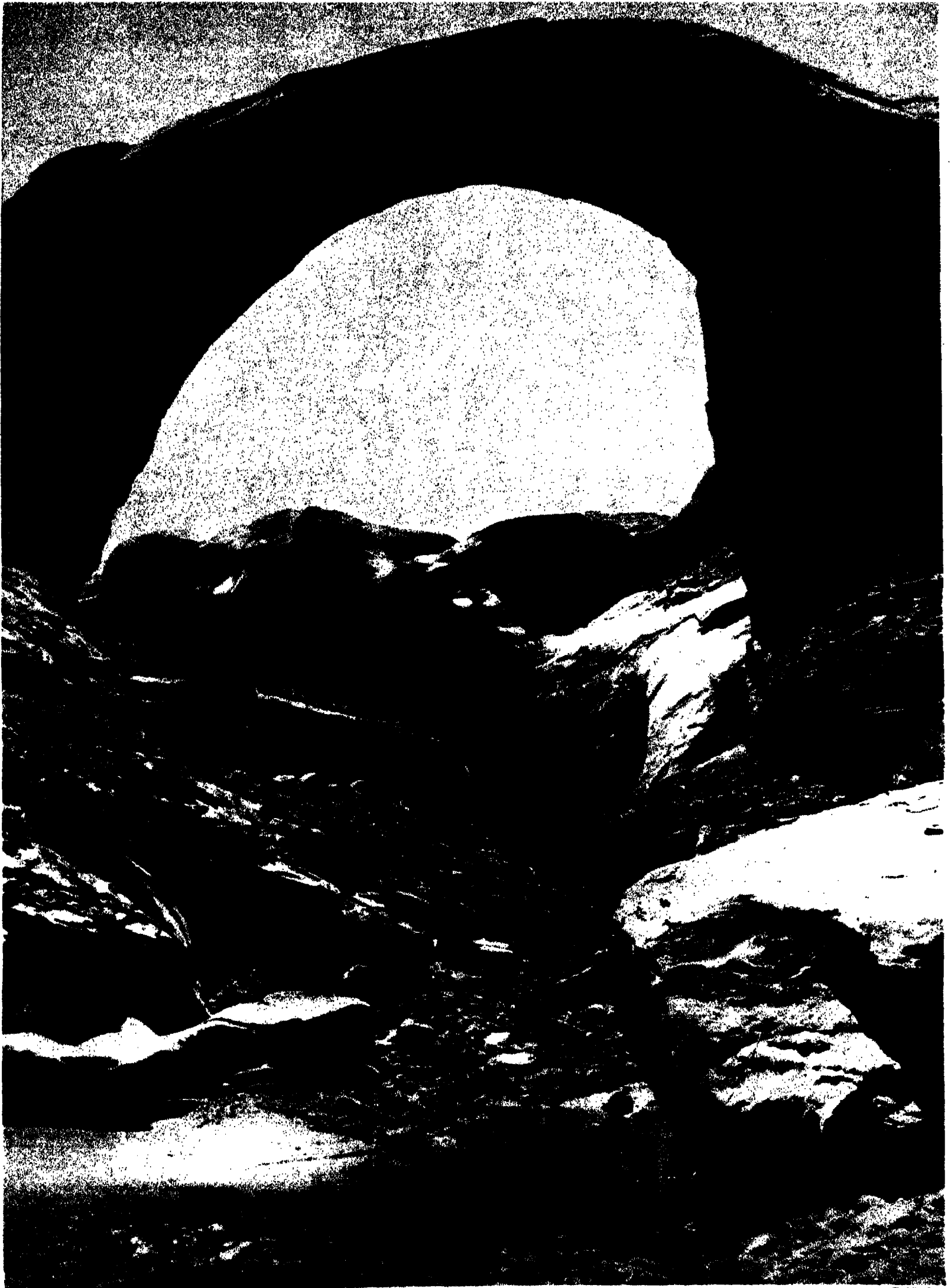
SHADOWLAND OF MASSIVE MOUNTAIN WALLS



A WONDERFUL PANORAMA OF THE "GREEN RIVER" GORGE IN PICTURESQUE UTAH

E.N.A.

NATURE AS BRIDGE BUILDER



E.N.A.

RAINBOW BRIDGE—AMERICA'S MOST REMARKABLE NATURAL ARCH

THE AMAZING MASONRY OF NATURE



WHAKAREWAREWA—THE "BRAIN POT" OF NEW ZEALAND

E.N.A.



PERCHED HIGH ON A PINNACLE OF ROCK—THE ISOLATED METÉORON MONASTERY, GREECE

E.N.A.

ALADDIN'S CAVES OF NATURE



E.N.A.

A BEAUTIFUL UNDERGROUND RIVER IN THE JENOLAN CAVES—NEW SOUTH WALES



E.N.A.

THE BLUE GROTTO, CAPRI—THE MOST BEAUTIFUL IN THE WORLD

THE FATHER OF THE FOREST



A GREAT REDWOOD TREE CATCHES THE SUNLIGHT THROUGH THE LATTICE OF THE
LEAVES IN CALIFORNIA

E.N.A.

THE HOME OF MANKIND

WE start with Nature's spectacle, the Home of Mankind; and we review the great plan of the varied environment allotted to the races of the world. We flash from the dank undergrowth of the jungle and the sunbaked desert to uncharted ice-floes as the ever shifting kaleidoscope turns before our eyes.

Although actually the human drama cannot be divorced from its setting, and the living story of man starts immediately to unfold itself, in this

regions based on their vegetation—that is, into woodlands, grasslands, deserts, etc. (Fig. 2).

Or again, figuratively, we might look on them as moods of Nature in which she compels mankind to live in certain restricted ways.

From the standpoint of man, particularly primitive man, these regions offer very different opportunities of getting a living. In the equatorial forests, great heat and damp sap his energy; the tangled mass of vegetation bars his



Courtesy, Canadian National Railways

BEAUTIFUL, BUT UNINHABITABLE

The summit of Mount Robson, the highest point in the Canadian Rockies.

section we shall concern ourselves with the surroundings themselves rather than the uses man has made of them.

There are many ways in which we could divide up the world, as, for example, in political units—empires, countries and states—or we might even chop it up arbitrarily as we would an orange. But to get a bird's-eye view of human environment we have chosen to mark off the world into immense tracks of territory where nature has arrayed herself in distinctive dress. In other words, we have divided the world into

footsteps and he remains, until white energy intervenes, a hunter and collector of wild seeds and fruits.

The hot deserts are equally unfavourable. Their wide stretches of barren sand and rock, their lack of water to quench thirst, and of any form of plant life suitable to the nourishment of human beings prevent settlement and compel those who invade their arid wastes to live the life of the nomad, except at an occasional palm-fringed oasis.

The cold desert that fringes the shores of the

THE HOME OF MANKIND

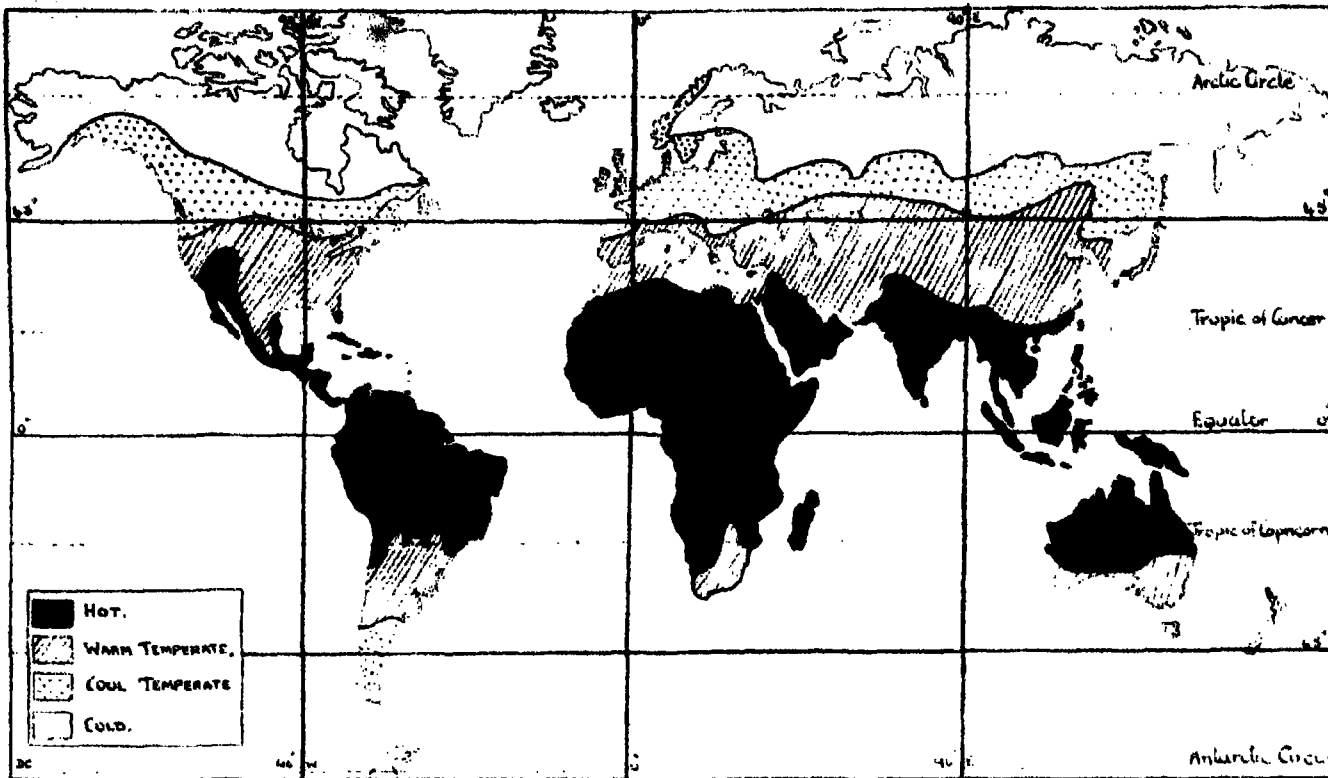


Fig. 1.
THE WORLD
DIVIDED
INTO
TEMPERATE
ZONES

Arctic Ocean has, likewise, little to offer its inhabitants, but a life of winter desolation. For eight months of the year it is covered with snow and almost the only vegetable food it provides is moss for reindeer, with various berries in the summer. For the Lapps and Eskimos the pageant of the seasons is either a dream or a memory.

On the other hand, the hot grasslands or the savannas that border the parched deserts with their rainy seasons followed by periods of drought, favour the growth of grass and certain trees, offer a home to cattle and the animals that prey on them, and permit the growing of cotton, bananas, and various kinds of palms.

Still more favourable are the prairies, which have become the granaries of the world. Where rain is plentiful plants and fruits spring up in abundance: where the rainfall is too small for

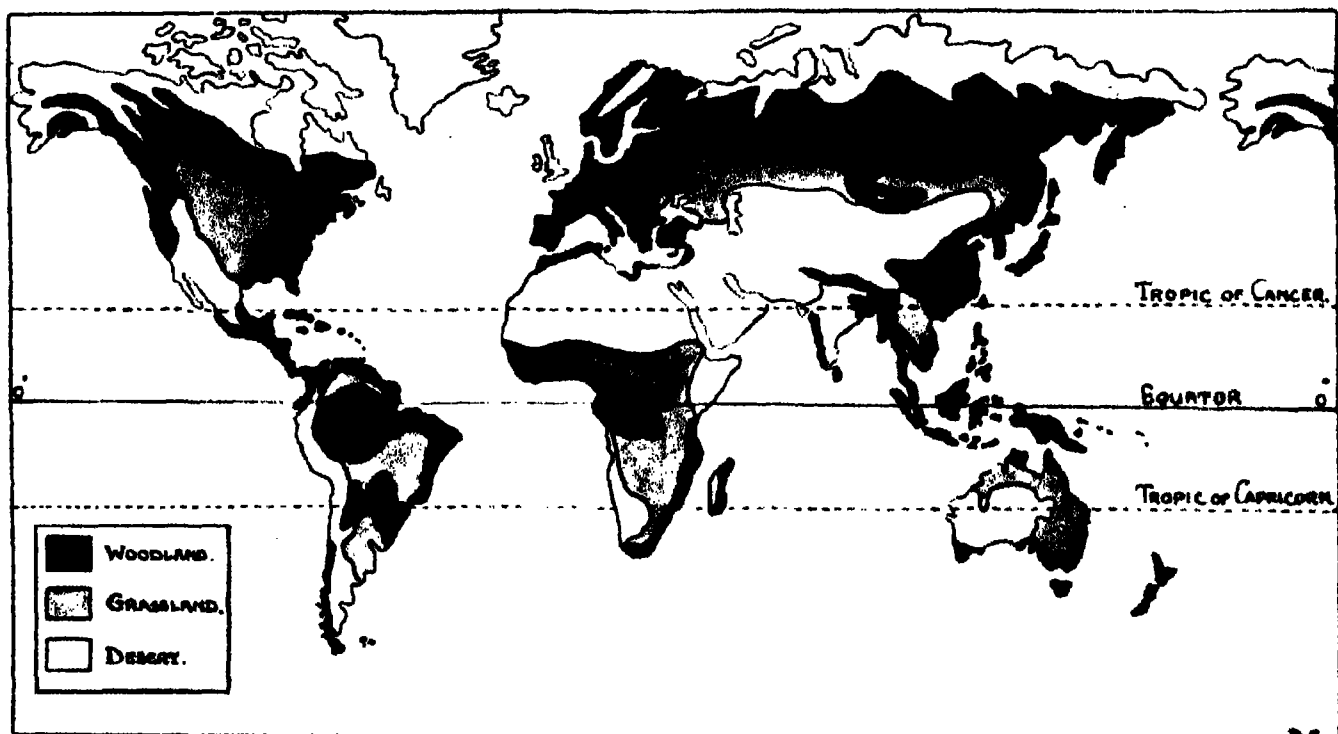
this, they may still be suitable for the rearing of sheep and cattle.

The northern forests, so characteristic of Scandinavia, Canada and Siberia, can be cleared by the woodman and farmed, while in their more or less primitive condition they offer work for the lumberer and the trapper, and fish in the rivers as a form of food.

In addition, we shall look at life on the untold islands of the Pacific amongst the sounding coral-reefs and lagoons; on the roof of the world amongst the wind blasted heights of Tibet; and amongst the ice-floes of the Poles.

The boundaries between the different regions are not the straight lines which are marked upon the maps. They are, rather, without definite boundary in which the characteristics of one region gradually mix and fade away into the next.

Fig. 2.
THE WORLD
DIVIDED
INTO
VEGETABLE
ZONES



1.—LIFE IN THE HOT WET FORESTS

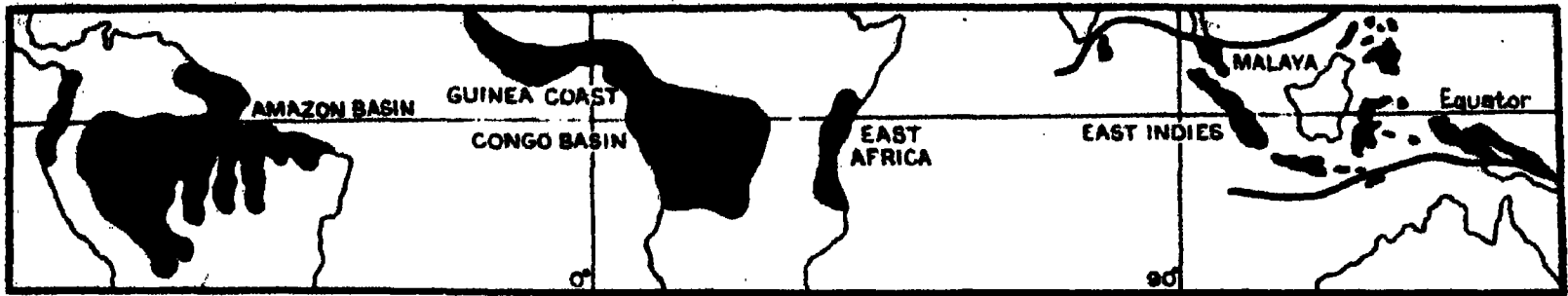
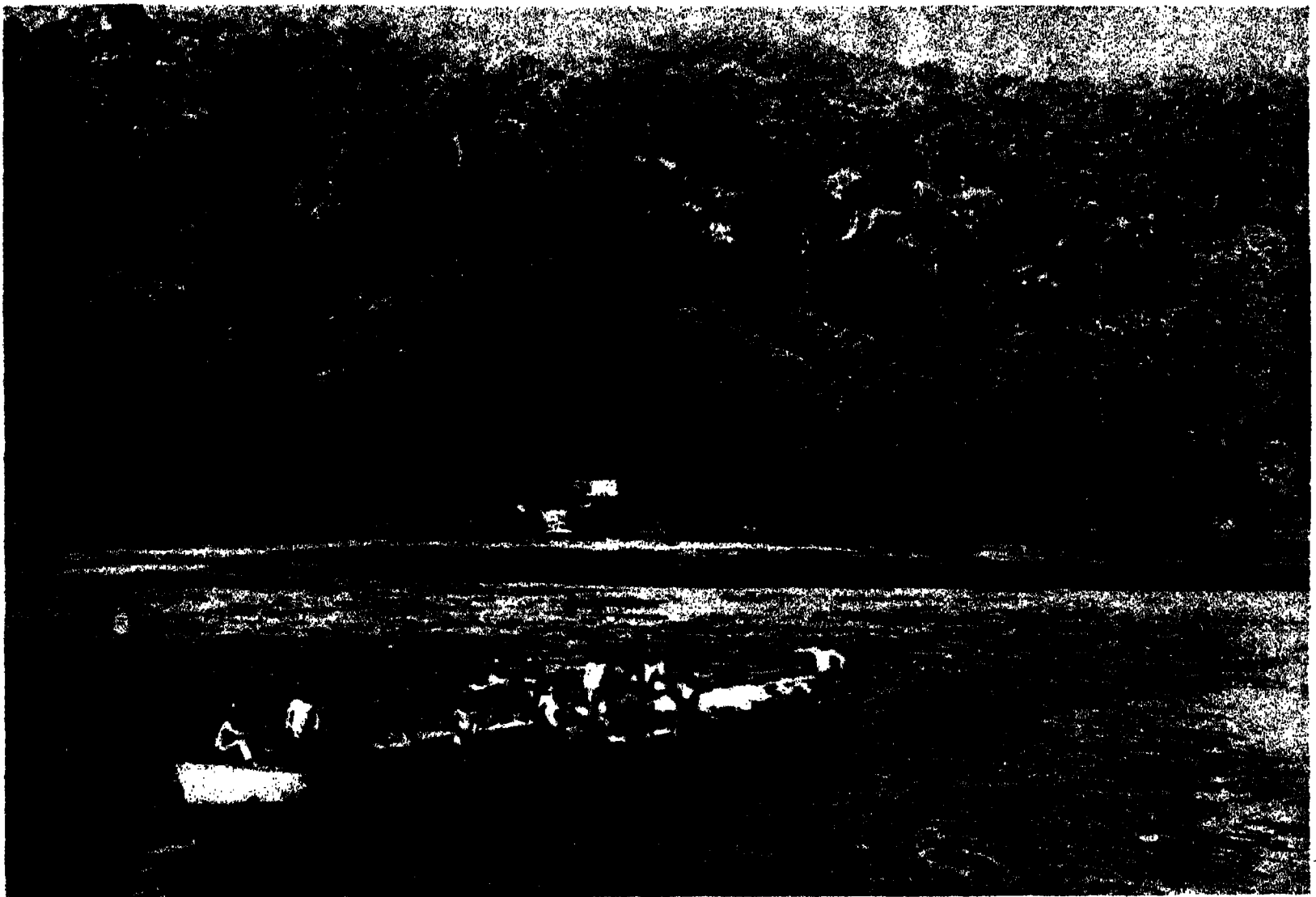


Fig. 3.—THE HOT WET FORESTS

FOR a distance of about 1,400 or 1,500 miles, north and south of the equator, there is a belt of land running round the earth which consists mainly of hot wet forests. Here are to be found forests so thick that man has to hack a path through them, and on the interlocking branches of the trees, monkeys can run and jump about without fear of falling to the ground. Thousands of miles have never been explored by the white man, but those who have braved

the terrors of jungle life, involving the dangers of disease and attacks from wild animals and a hundred deadly insects, have told of the beauties of Nature and the strange people, such as the pygmies, which are to be found there. This vast area includes the Amazon and the Congo, the lower parts of Guinea in West Africa, the lower parts of the East Indian Islands and Malaya, and the Guianas in South America. Untold wealth awaits man's final conquest of these lands.



E.N.A.

SEEING THE JUNGLE IN SPITE OF THE TREES

The interior of the jungle is so dark, damp and gloomy, that except where man has made a clearing, the leaves and branches of the trees cut out the light of the sun. The floor is a mass of sodden decaying vegetation containing the germs of many dread diseases. But the aeroplane, ignoring the difficulties of travellers on the land, soars majestically above, thus enabling this wonderful picture of the River Amazon, winding its sluggish way through the dense forest, to be taken.

LIFE IN THE HOT WET FORESTS



E.N.A.

THE JAGUAR COMES DOWN TO EARTH

The jaguar of the Amazon forest, though shown here on the ground, lives almost entirely in the trees where it preys upon the countless number of chattering monkeys. There is so little room to move about on the floor of the forests that there are few really large animals. In fact, most of the animals live in the trees, especially in the very swampy forest regions.



E.N.A.

A TOPSY-TURVY WORLD

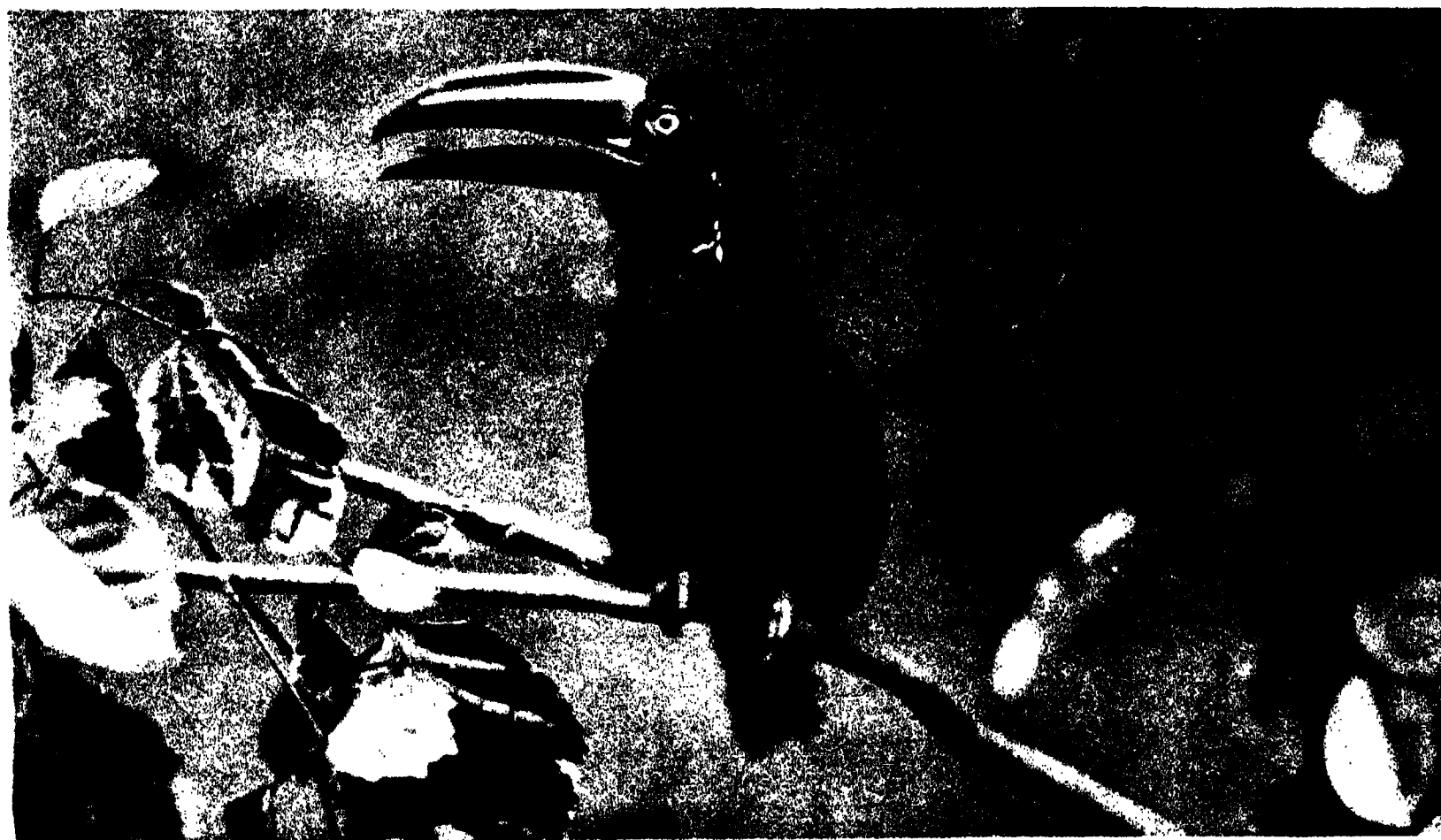
The three-toed sloth, for instance, is quite helpless on the ground. It spends its existence upside down, clinging with its fingers and toes, that have been converted into hooks, to the swaying branches. It sleeps during the daytime, rolled up in a ball with its head tucked between its arms, but wakes up at night to feed on leaves and fruit, or toucans and egrets.

LIFE IN THE HOT WET FORESTS



FEATHERS WORTH A FORTUNE

These slender birds are egrets, whose delicate white feathers form the "osprey" plumes dear to the heart of fashion. The egret flourishes in Florida and Cuba, and also in Asia and Australia. The picture shows two egrets at the entrance to their nest, where their babies are as far away as possible from their enemy, the three-toed sloth, which preys on them.



A BUSINESS-LIKE BEAK

The owner of this huge beak is a bird found in Brazil and Guiana, called a toucan. His beak is deep orange, with a large blue spot near the tip, and his feathers are jet black—a really handsome fellow. In the Andes the toucan is found living at a height of 10,000 feet. The beak is not so top-heavy as it may appear, the outer covering and bone being very light.

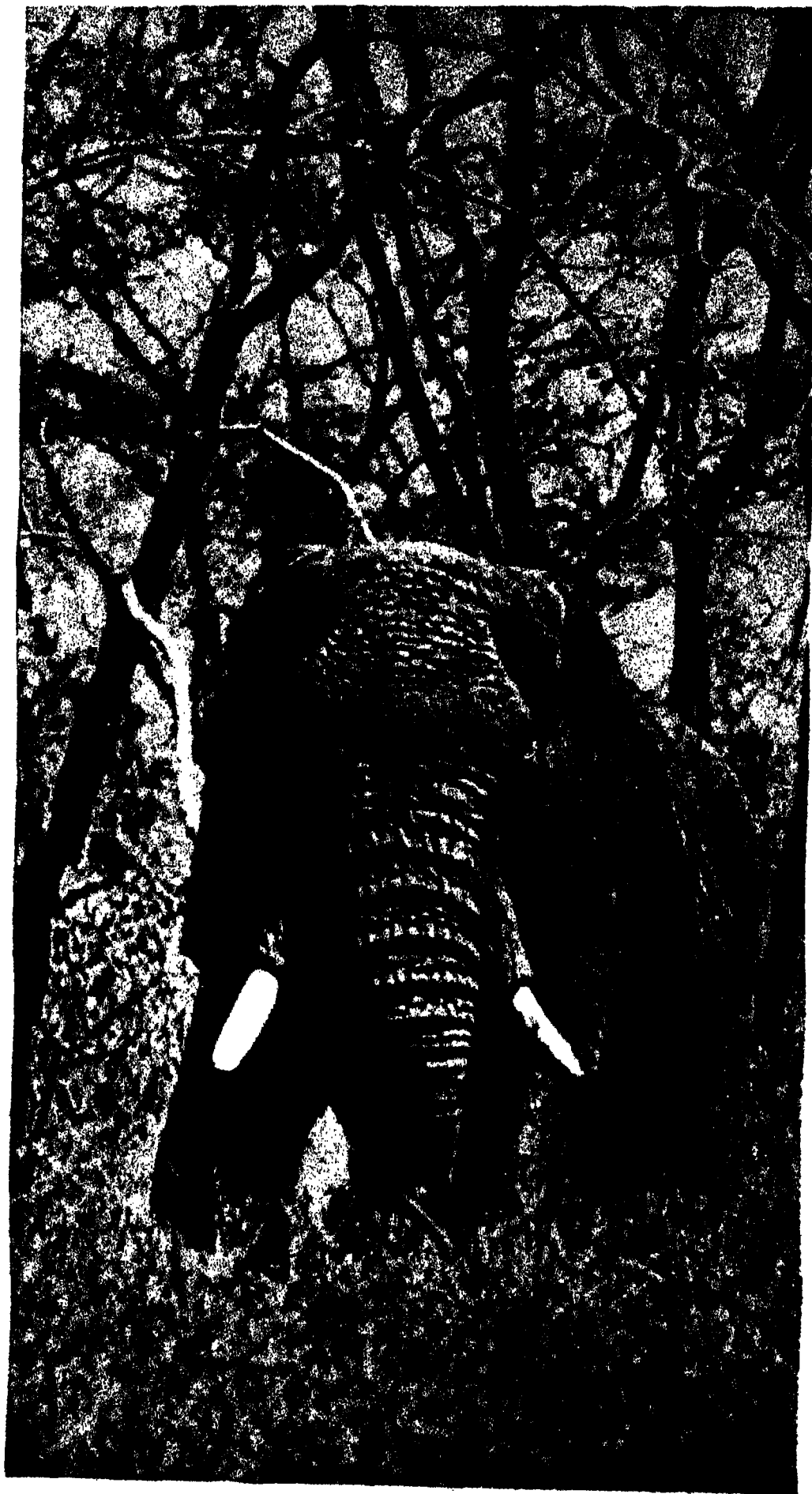
LIFE IN THE HOT WET FORESTS



E.N.A.

A REMINDER OF THE DARWIN THEORY

Monkeys of all sorts and descriptions abound in the hot wet forests, but the greatest of them all is the orang-outang of Sumatra and Borneo. This animal, so like a man, is the one which Darwin had in mind when he developed his theory of evolution. It is an excellent climber, but a bad walker and rarely comes down to the ground. The strength of a gorilla, particularly when annoyed, is enormous and its agility is uncanny.

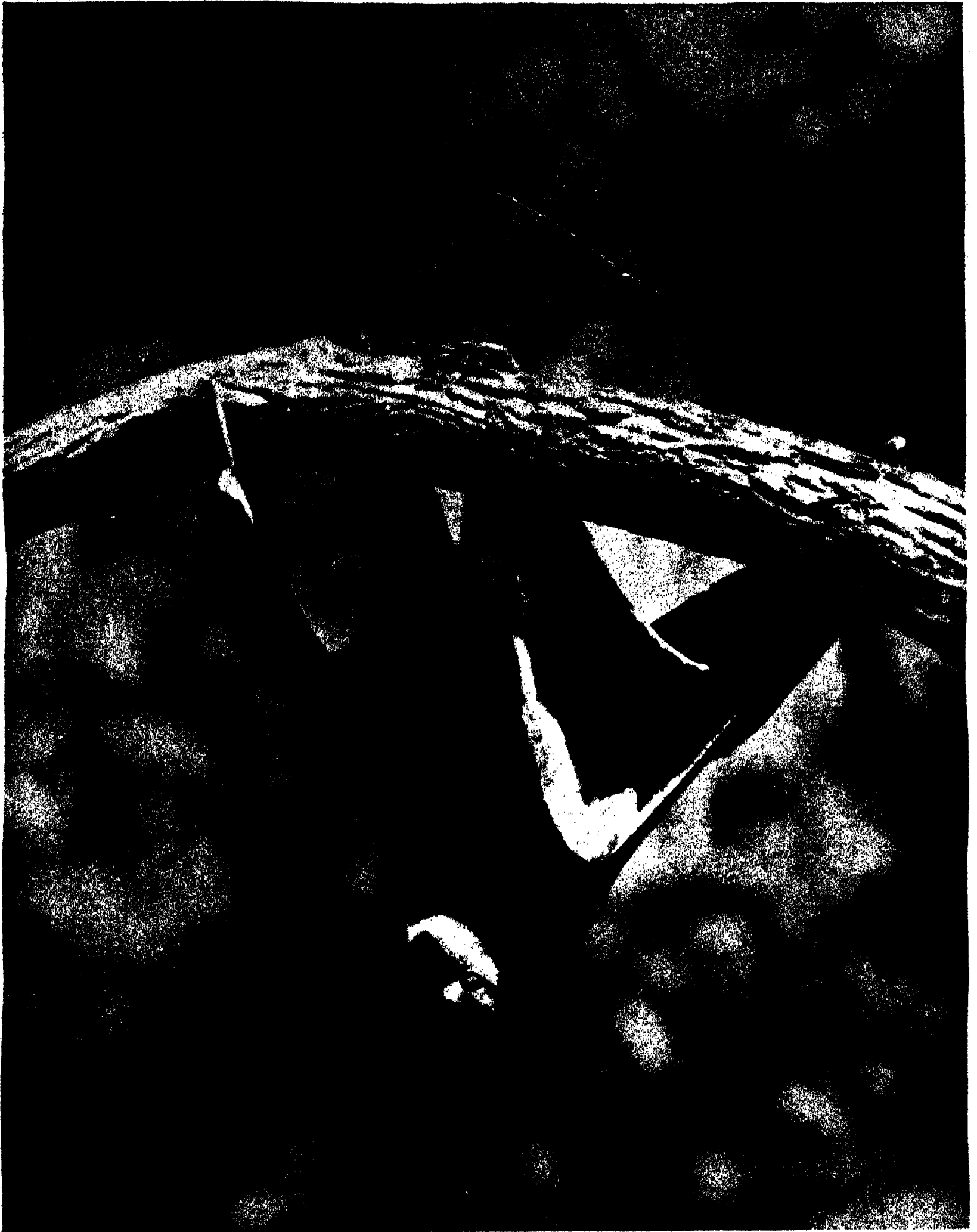


E.N.A.

PLOUGHING HIS WAY THROUGH THE UNDERGROWTH

It is perhaps strange to find such an enormous animal as the elephant in the hot wet forests, but in the Congo forest, which is only a little more open than that of the Amazon, he is to be found forcing his way through the forest. His weight and foot strength enable him to trample down the undergrowth and to push down most things which are in his path.

LIFE IN THE HOT WET FORESTS



THE FLYING FOX

Where the forest is rather open, many of the animals that live amongst the trees are provided with some form of parachute which gives them partial powers of flight or of taking long jumps. There are flying frogs, flying lizards, flying squirrels and flying foxes. The flying fox, however, is not really a fox, but a bat. It is found in the hot wet forests of Malaya, the East Indies and Australia, and also in India, hanging to the bark of trees with its cruel-looking claws.

LIFE IN THE HOT WET FORESTS



E.N.A.

HACKING A ROAD THROUGH THE JUNGLE

The undergrowth grows so quickly, that the few roads which the natives have attempted to build are soon overgrown and become useless. But the white man must get to the rubber plantations, and here we see Malayan labourers, under the expert guidance of the white man, hacking their way through the jungle to make a road of a more permanent character of their own. It is by such efforts that man is conquering the jungle and acquiring its wealth for his own uses.

LIFE IN THE HOT WET FORESTS



E.N.A.

A HOME ON STILTS ON THE AMAZON

The native builds his huts on wood piles to guard against floods, deadly snakes, or preying animals. Left to himself he is not interested in rubber and therefore he has no occasion to go far into the jungle, but being a fisherman he builds his huts near the water-edge, to be near the main source of his food. He only hunts on the land when fish is very scarce.

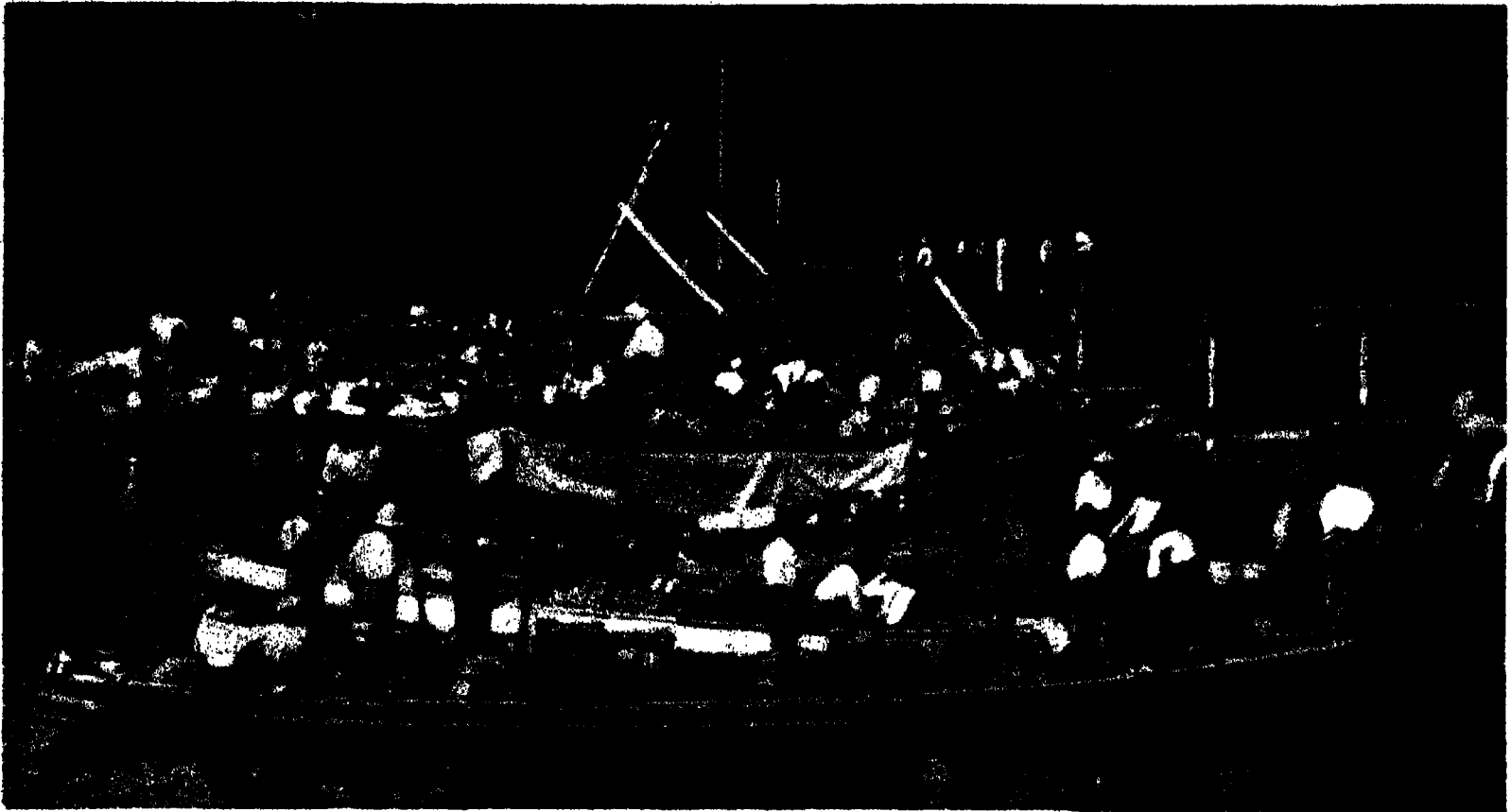


E.N.A.

A CANOE HOLLOWED OUT BY FIRE AND BY FLINT

Here are natives paddling a canoe on the Amazon. The only convenient method of travelling in these forest regions is by boat—not elaborate boats, but canoes, in most cases, merely tree trunks hollowed out by fire and axe. In very inaccessible places out of touch with traders the axe is nothing but a sharp stone, a modern reminder of the Stone Age.

LIFE IN THE HOT WET FORESTS



Courtesy, The West India Committee

A TRADING EXPEDITION IN BRITISH GUIANA

The equatorial forests are rich beyond man's wildest dreams in mineral and raw materials, but the unhealthy conditions have prevented them from being fully exploited. Here, however, we see an expedition setting out in their punt-like boats in search of balata, which is a sort of gutta-percha-like substance used in the manufacture of diving-bells and cables.



E.N.A.

HUNDREDS OF TUSKS IN STORAGE

From time immemorial man has hunted the elephant to obtain ivory from his tusks. Here we see hundreds of tusks in the ivory stores at the London docks. Some of these are ten or eleven feet in length. From them will be made piano keys, umbrella handles, backs of brushes, and many other articles, both useful and decorative for the service of men—and women.

2—THE HOT GRASS LANDS

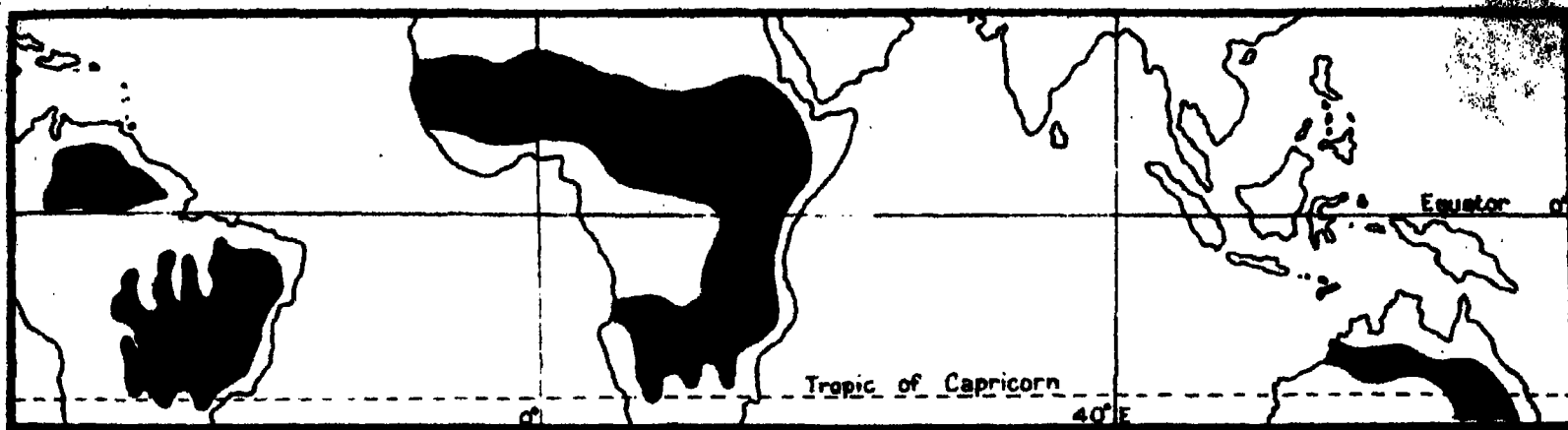


Fig. 4.—THE HOT GRASS LANDS

AS soon as we leave the hot wet forests, we come to another belt of hot grass lands, where the rain falls in spring or summer, and the rest of the year is dry. No longer is man restricted in his movements and life is not nearly so difficult. Over the broad expanses roam the

animals of the wild. These parched grass lands are to be found in the Sudan, in Africa (where they are called savannas), on the East African plateau, in Venezuela, in Brazil, the park-lands of South Africa, and parts of North Australia. In these lands the white man finds a congenial home.



E.N.A.

THE DREARY MONOTONY OF THE AFRICAN GRASS LANDS

This is a typical view of the African savanna land—flat grass lands, with scattered trees. Notice the brick round huts of the native settlement, and the dreariness of the whole scene under the hot, leaden sky. A striking contrast to the jungle.

THE HOT GRASS LANDS



Courtesy, South African Railways

ZEBRA AND WILDBEESTE AT WATER

Here we see zebra and wildbeeste which have ventured out into the open to drink after the sun has gone down. The stripes of the zebra, which appear so vivid in the picture, make it practically invisible beneath the shade of trees or bushes. Wild animals were disappearing so rapidly in South Africa that the government has set aside an enormous reserve, called the Kruger National Park, in which it is illegal to kill any of the animals. Motorists driving through the Park often meet lions.



Courtesy, South African Railways

ANTELOPE EVER FEARFUL OF A STRAY LION

These beautiful impala are one of the many kinds of antelopes found in South Africa. They are very timid animals and Nature has provided them with great powers of flight in order to escape from the attacks of their enemies, especially the lion—they even appear suspicious of the photographer. Wild animals seldom drink until the shadows of night are falling.

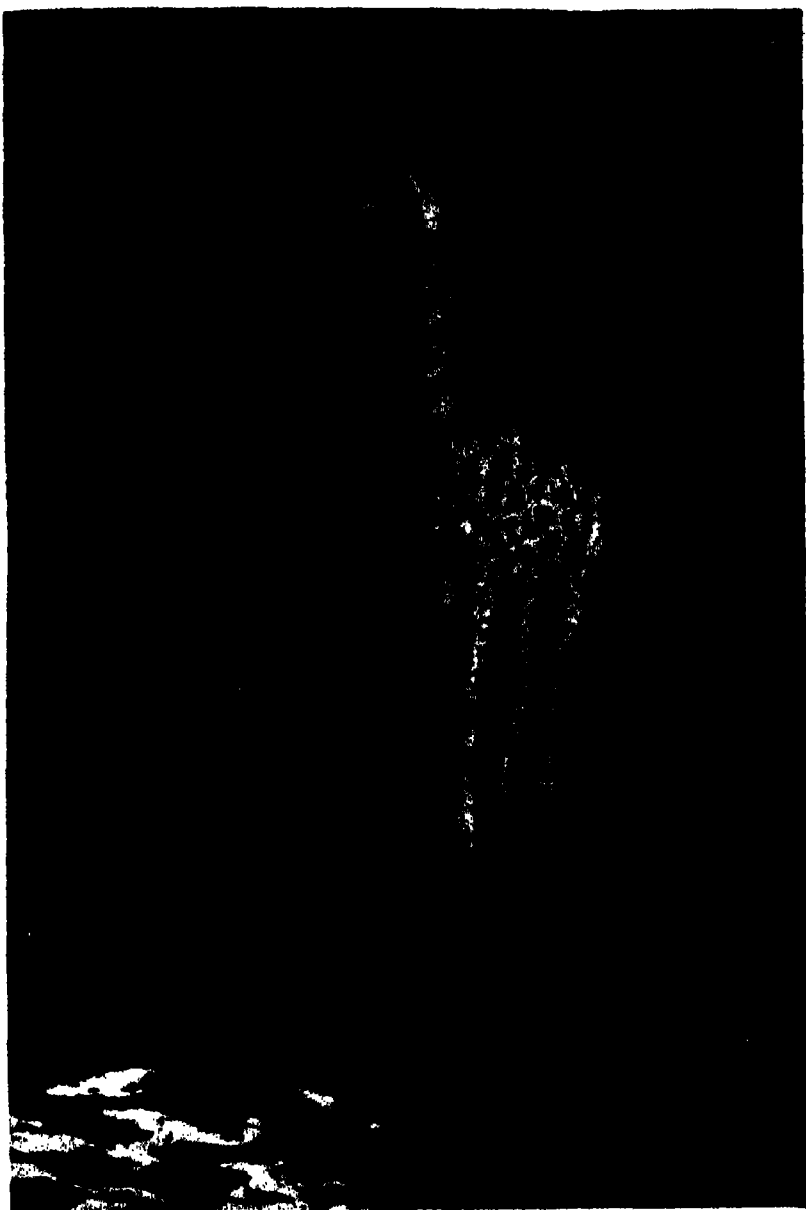
THE HOT GRASS LANDS

THE GIRAFFE STEPS OUT

A long neck, long legs and a long tongue are necessary to the giraffe which roam the savanas of South Africa and feed upon leaves and young twigs which grow on the tops of low trees. They often move about in herds and are able to cover enormous distances at great speed, and once they are frightened into movement there is no knowing how far they will travel before they again feel safe. Giraffes average 18 feet in height.

THE TIMID AFRICAN LION

It is usual to refer to the lion as the King of Beasts, but those who know him well tell us that he is, in reality, a timid creature who, in normal circumstances, will run away rather than face a man. His uniform colouring suggests that he may once have been a desert animal where his tawny hide would have been an excellent camouflage. In Africa he preys upon the antelope family, and contrary to general impression, lives in the long grass, where he is hard to spot.



Courtesy, Southern Rhodesian Government



Courtesy, South African Railways

THE HOT GRASS LANDS



FASHIONS MAY CHANGE, BUT THE OSTRICH IS STILL USEFUL

Ostrich feathers, to satisfy a certain type of feminine vanity, were once gathered from wild birds in north and east Africa and Arabia. Fashions have changed, however, and nowadays the smaller demand is supplied from the ostrich farms of South Africa. The ostrich lays eggs weighing 3 lbs.

Courtesy, South African Railways

AN OSTRICH FARM



Courtesy, Australian Government

A BIRD THAT CANNOT FLY

In lands where there are few trees many birds possessing wings have lost the art of flying. Running birds have adapted themselves to their environment by the growth of long legs and great height of neck which gives them a wide range of vision. The chief of these birds are the cassowary (seen in the picture) and ostrich of South Africa, the rhea of South America and the emu of Australia. Unlike English birds, such as chickens and turkeys, they do not need rich food.

STRANGE CREATURES OF THE AUSTRALIAN GRASSLANDS

In the savanas of Australia the most typical bird is the laughing jackass or kookaburra. This powerful bird has a strident laugh and is protected from destruction by the Australian Government as it kills so many mice and reptiles.

BEARS WHO FEED ON EUCALYPTUS

These little grey koala bears live in the lofty eucalyptus trees of Australia, and feed on the buds and tender shoots of these trees. Their flesh is used as food, and their coats for making cheap fur articles. They are the original "teddy bears." This family believes in sticking together.



Courtesy, Australian Government



Courtesy, Australian National Travel Bureau

THE HOT GRASS LANDS



Courtesy, Sudan Government

WHERE OUR SHIRTS COME FROM

Here we see Sudanese natives at work on a cotton plantation. Generally speaking, the savannas are not suitable for the growing of cotton, but in a few limited areas, such as Gegira, a plain lying to the south of Khartoum, cotton is now being grown with the aid of irrigation which brings sufficient moisture to the delicate plants. The cotton grows on low bushes.



Courtesy, Sudan Government

SAFE FROM THE MENACE OF THE WILD

Round the African cattle farms roam the hungry animals of the wild. In this farm in the Sudan each animal is tethered to a post to prevent it from straying and being attacked and devoured by ever-watchful lions. Cattle thrive in these grass lands.

THE HOT GRASS LANDS



Courtesy, Australian Government

THEIR LAST ROUND-UP?

Enormous herds of cattle are reared for their beef and hides in the north of Australia. At certain seasons of the year they are mustered by stockmen to be sold or branded. A large herd of cattle naturally requires the most skilful handling.

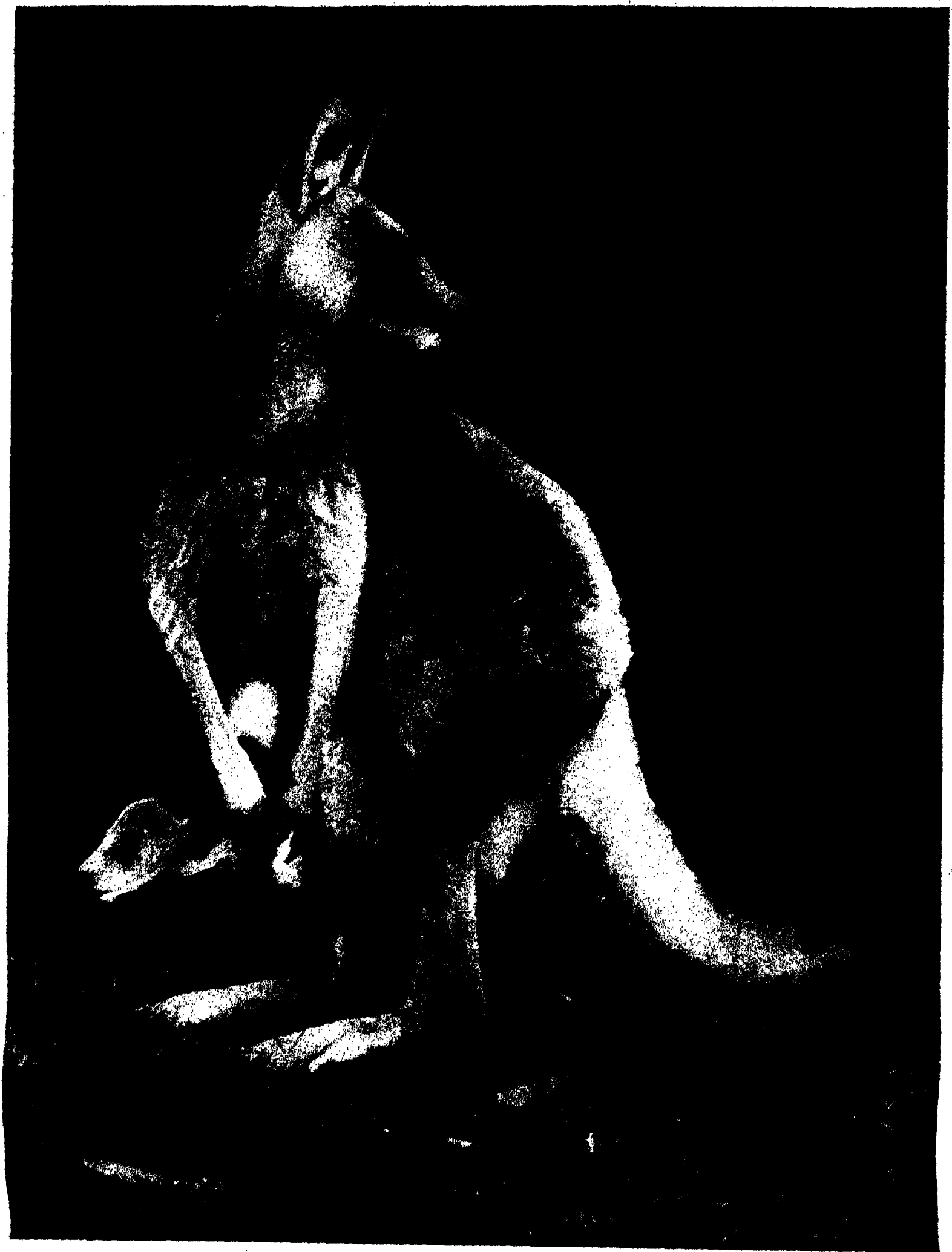


Courtesy, Australian Travel Association

STAMPEDING THE CATTLE

The stockmen drive the almost wild animals into one big herd usually in a clear patch of country. Here the angry, frightened beasts push close together in a great mob. A thousand head of cattle is a wonderful sight, especially when swimming a river.

THE HOT GRASS LANDS



Courtesy, Australian Government

BABY KANGAROO LOOKS OUT AT THE WORLD

The kangaroo feeds on grass, shoots of bushes and shrubs, and the leaves of trees. It escapes its enemies not so much by running as by leaping with the aid of its long, strong tail. The female rears her young in a pouch—one at a time.

3.—IN THE LANDS OF THE MONSOON

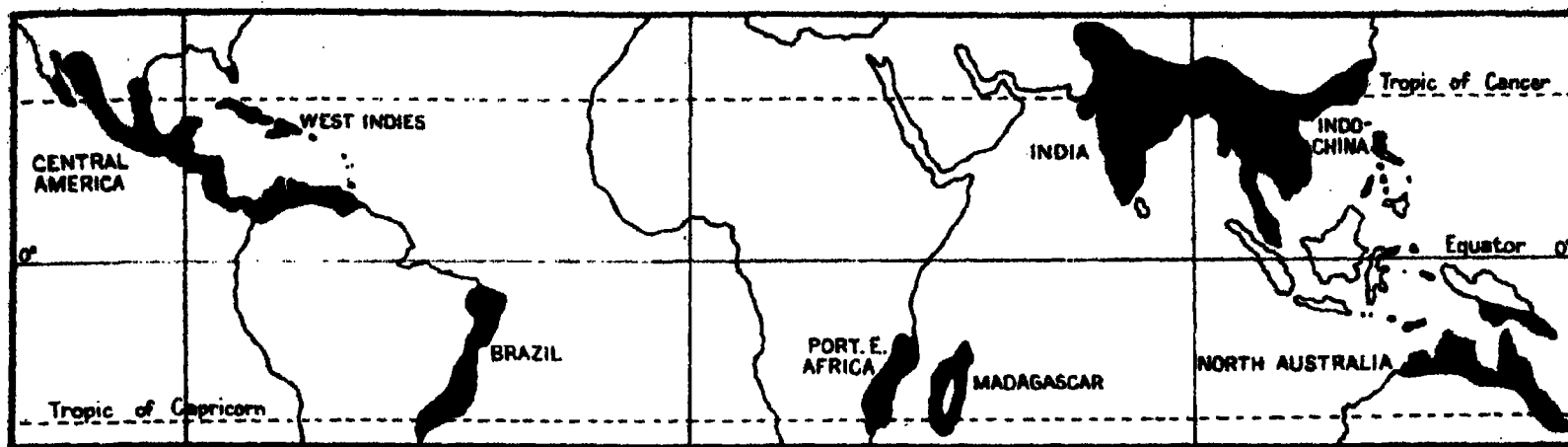


Fig. 5.—THE MONSOON LANDS

THE 1933 Everest Expedition was cheated of success by the monsoon, which brought with it tearing gales and blinding rain and snowstorms. But that same monsoon was being welcomed in the plains of Bengal and Assam where the rice crop depended on the rain the monsoon brought. The "monsoon" lands have six months dry season, when the wind blows from the land, and six months wet season when

the wind blows from the sea. India, Indo-China and Southern China, are hot monsoon lands, while Malaya, the East Indies, the coast lands of Northern Australia, are temperate. Rice, tea and jute, are important crops in the hot monsoon lands, and once the crops have been sown the farmer anxiously watches for the wind to change and bring the spring rains. A prolonged drought means ruined crops and often dreaded famine.



E.N.A.

CLEARING A TEAK FOREST IN BURMA

Teak is a very hard, heavy wood, used chiefly for railway sleepers and for chests for packing tea. It grows abundantly in the hot monsoon lands of India, Indo-China, and Southern China, where it gets all the heat and moisture that it needs.

IN THE LANDS OF THE MONSOON



E.N.A.

A LIVING CRANE PILING TEAK IN RANGOON

Elephants and teak are the chief products of the hot wet jungle. Without the elephant there would be practically no trade in teak as no other animal is strong enough to lift the timber or to struggle through the thick mud of the wet season when the trees are felled. Notice how the elephant uses his ivory tusks to lift the wood, and steadies the incredibly heavy plank with his powerful trunk.

CAPTURING A WILD ELEPHANT

The centre elephant is a wild one, which has been captured by using the two tame ones as decoys. The elephant seldom breeds in captivity, and it is necessary to capture wild ones and train them. Large numbers of wild elephants are driven by beaters into enclosures and fastened by their hind feet to tree stumps, preparatory to a very sympathetic training—sympathetic, since elephants have long memories as well as long trunks. The tame elephants seem to enjoy the business, having decided, probably, that captivity really improves on closer acquaintance!



E.N.A.

IN THE LANDS OF THE MONSOON



Courtesy, Australian Government

CLEARING A FOREST TO BUILD HOMES

Few people live in Queensland, the northern monsoon part of Australia, but certain districts are being steadily cleared so that settlement may be possible. The picture shows how difficult is this task of clearing away dense forests to make a home.



Courtesy, Messrs. Martin, London

HARVESTING THE TOBACCO CROP FOR CORONA CIGARS

Here is a scene in a Cuban tobacco plantation. When these leaves have been dried and fully matured, fragrant cigars will be made from them, packed carefully in cedarwood boxes and sent to all parts of the world, for the delight of smokers.

IN THE LANDS OF THE MONSOON



Courtesy, West India Committee

MAHOGANY—LIKE A NEEDLE IN A HAYSTACK

Mahogany trees are so widely scattered that dense forests have to be patiently searched for them. Mahogany is richly coloured and very hard and is, of course, in much demand for furniture. Much of our supply of mahogany comes from the forests of British Honduras in Central America.

THE TREE FROM WHICH CHEWING-GUM IS MADE

In the forests of Central America grows the sapodilla tree, shown in the picture on the right. The man is "bleeding" the tree for a milky liquid, called *chicle*, which is the raw material of the youthful, but flourishing, chewing gum industry. Most of the supply is obtained from Guatemala.

TWO MORE VALUABLE TREES IN THE MONSOON FORESTS



E.N.A.

IN THE LANDS OF THE MONSOON

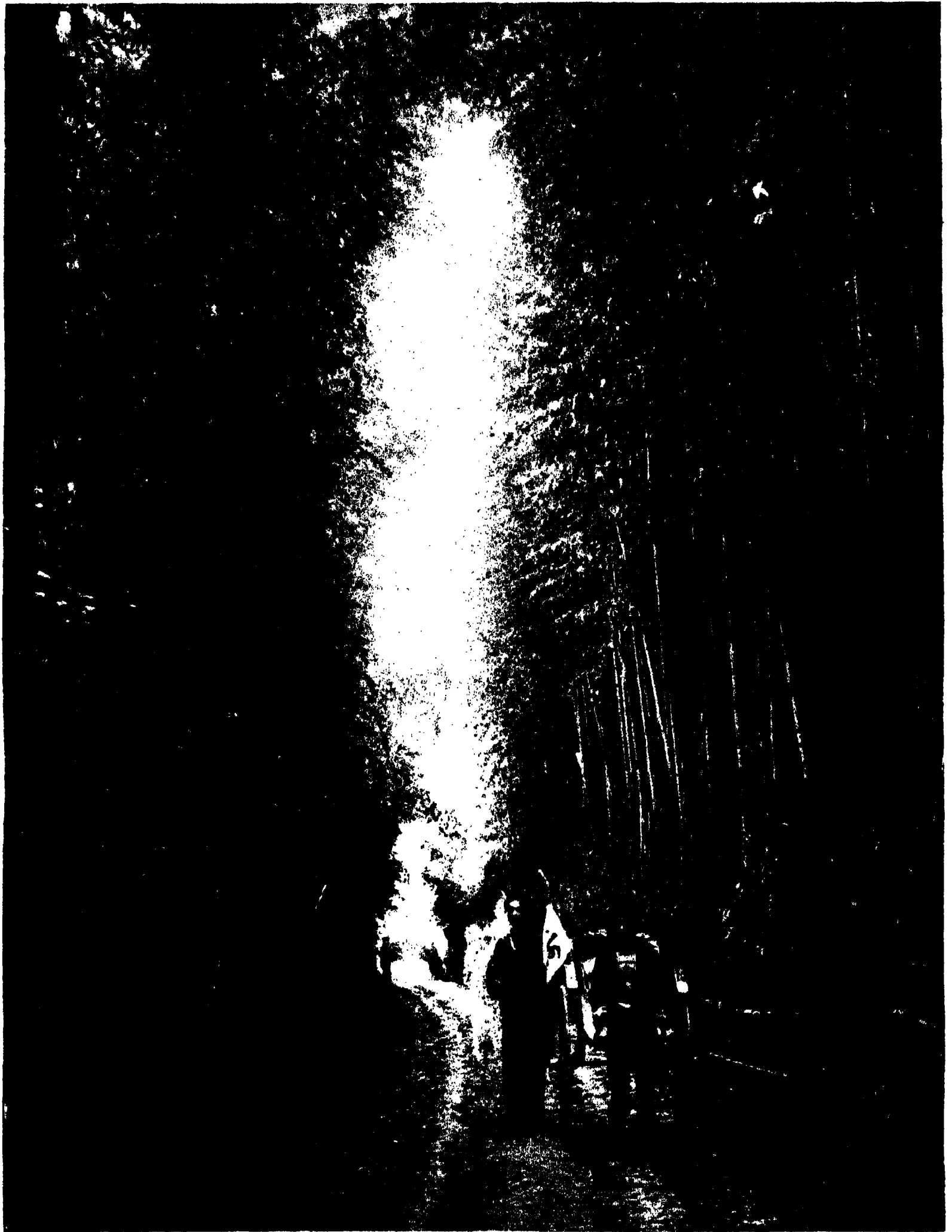


"TIGER, TIGER BURNING BRIGHT"

E.N.A.

A tiger emerges from his lair in the dark depths of the jungle undergrowth. Tigers roam through the forests of the monsoon lands preying on deer and the smaller mammals as they come to drink at the water holes in the cool of evening.

IN THE LANDS OF THE MONSOON



NATURE'S CATHEDRAL—A NAVE OF BAMBOO TREES

E.N.A.

In the warm south of Japan the bamboo is the most common tree. The Japanese use it extensively for household purposes; domestic and light furniture, and curtain rods made of bamboo were once familiar objects in most of our homes.

4.—LANDS OF SAND STORMS AND OASES

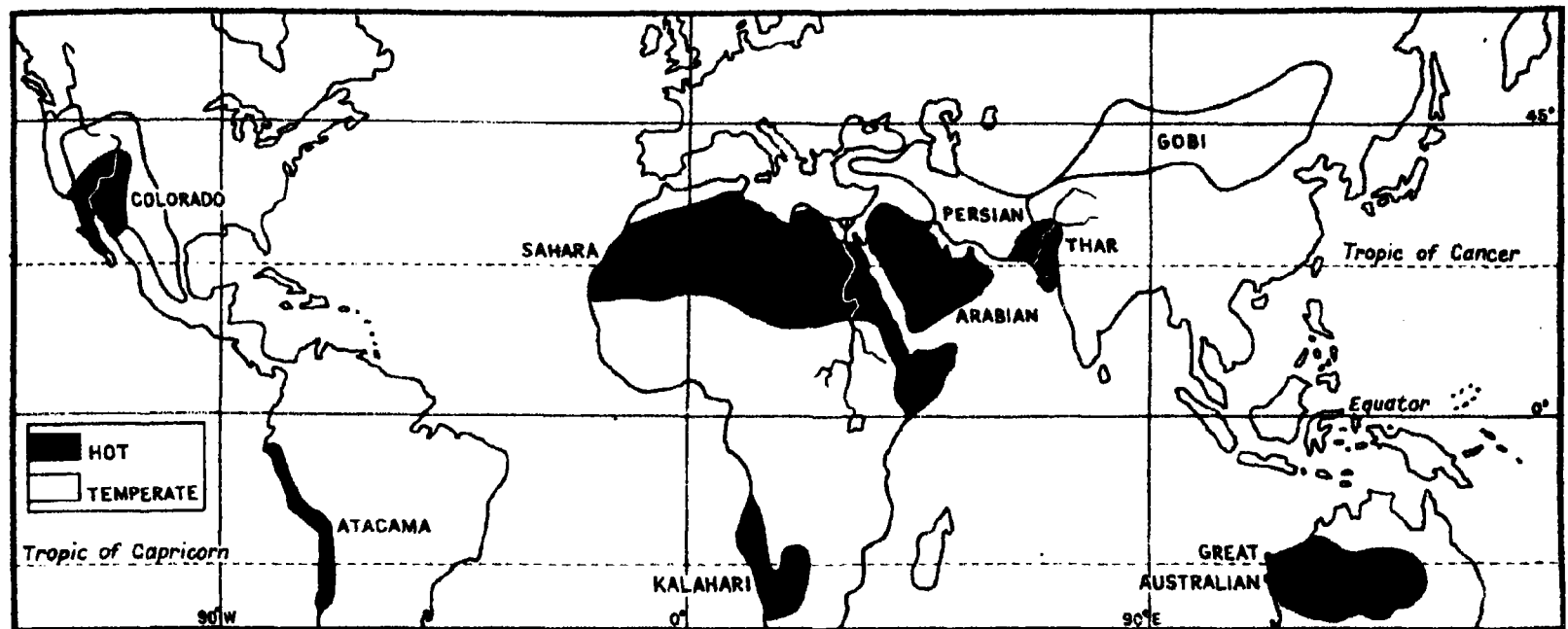


Fig. 6.—THE DESERT LANDS

FROM lands teeming with countless millions of people, and with regular wet and dry seasons, we now turn to places where Nature seems to resent the presence of man, like the Sahara Desert in Northern Africa or the western interior of Australia. Thousands of miles of sand, an almost complete lack of water and con-

sequently no vegetation, make permanent settlement impossible, except in the outskirts, in such places as Tunis or at an occasional oasis. And then, as though to mock him, she puts mirages in the sky or, in Persia, oilfields in what are, judged by the white man's standards, certainly the most unsavoury spots she could find anywhere.



E.N.A.

A SHIFTING SEA OF SAND

A sand dune 500 feet high to-day may have disappeared or changed entirely in appearance to-morrow, after the wind has lashed the grains of sand into a cloud so thick that it often obscures the midday sun. The Sahara is nearly as big as Europe, and one-fifth of its area is nothing but a wilderness of sand, while the other four-fifths are barren rock or stony waste. The camel is the only animal which appears to be completely at home in these undulating miles of sand and stony waste.

LANDS OF SAND STORMS AND OASES



R.N.A.

A WELCOME OASIS AMONGST THE DUNES

But Nature must have felt the awful loneliness of this region and longed for beauty, for here and there are to be found small oases which the weary traveller, burnt by the sun, almost stifled by the small particles of sand, and parched from lack of water, hurries to reach. Here he will find welcome shade and a spring or well.

LANDS OF SAND STORMS AND OASES



E.N.A.

WHERE TWO HUNDRED DATES GROW ON EACH LUXURIANT BRANCH

Dotted along the coast of Northern Africa and bordering the desert region, are larger oases where cattle may be reared and grain grown. Here the date palm, which provides the staple food, is found in abundance, each bunch containing on an average 200 dates. This picture was taken in the garden of an Algerian house.

LANDS OF SAND STORMS AND OASES



DATES IN THE TREE TOPS

E.N.A.

Nature has placed the dates at the very top of the palms, each of which is considerably taller than the average house. Natives climb the trees, and on very tall ones there may be as many as four men at the same time, who pass the bunches downwards from hand to hand. The dates are packed in baskets strapped to donkeys and carried away to be sorted.

LANDS OF SAND STORMS AND OASES



E.N.A.

THE GLITTER AND COLOUR OF AN AFRICAN MARKET

Here we see a market in an oasis in Algeria, where dates, carpets, horses, and "all the perfumes of Arabia" are offered for sale. Besides wares, the gossip of the day is also exchanged in the market place by these dwellers in the sun!



Courtesy, Australian Government

THE "CHAIN-GANGS" OF THE AUSTRALIAN DESERT

One of the largest deserts in the world is to be found in the western interior of Australia, and here we find our old friend the camel. With the aid of the camel great distances can be covered, and as we see here, when on a journey, the beasts move in single file, each fastened to the one in front by a length of rope tied to a wooden peg in its nose, and to the one behind by a line lightly tied to its tail. The camel is indeed man's greatest friend in the desert places of the world.

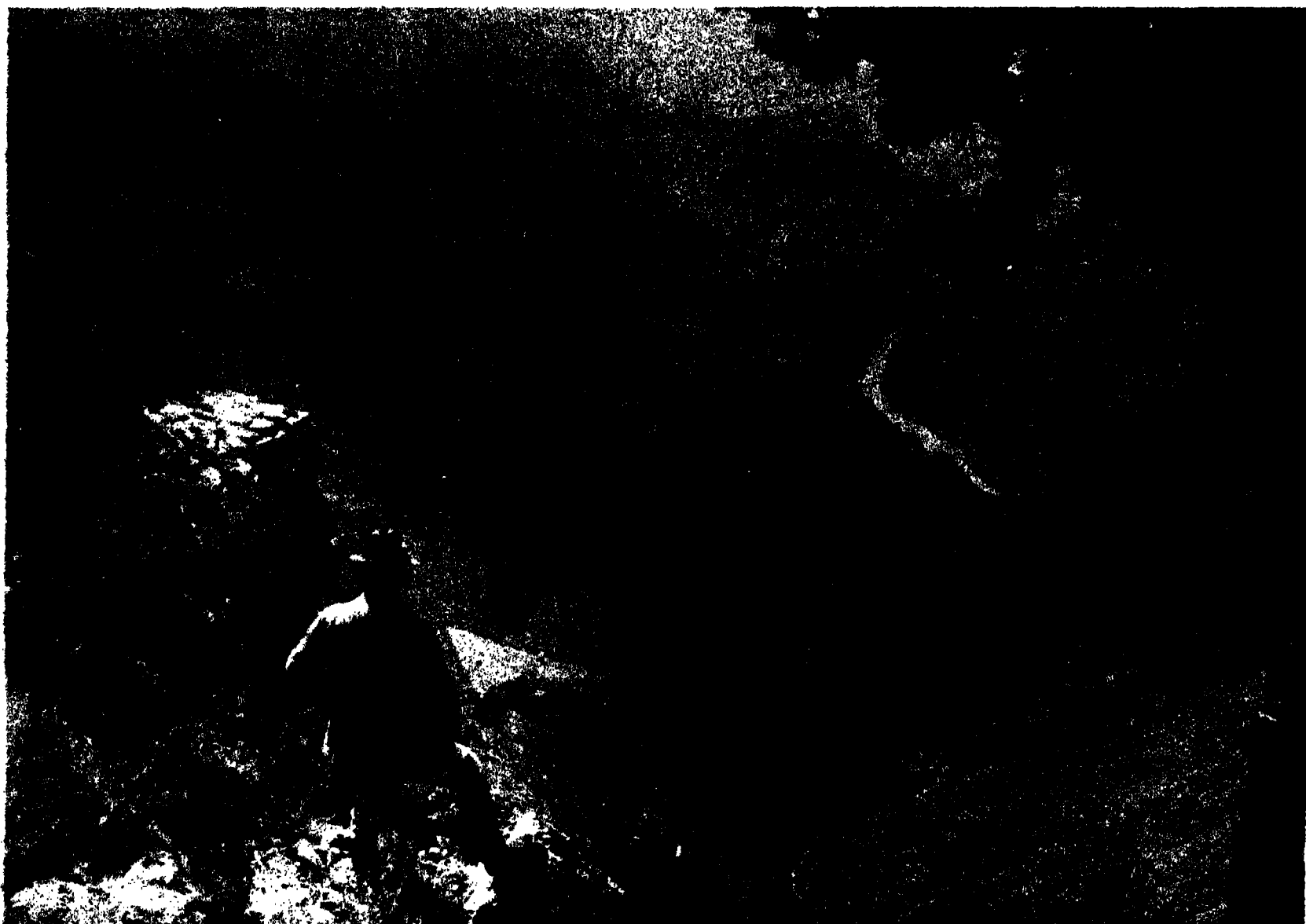
LANDS OF SAND STORMS AND OASES



"WHERE SHADOWS PASS GIGANTIC ON THE SAND"

E.N.A.

No one who has not experienced life in a desert can really appreciate the complete stillness which can almost be felt. Except during a sandstorm there is not a sound of any description, and at night the cloudless sky is studded with millions of stars. This desert in Mongolia has only one advantage over the Sahara Desert—it is a little cooler because it is further north.



THE TOWERING RED-WALLS OF THE GRAND CANYON, ARIZONA

E.N.A.

What a wonderful scene—and yet, we are looking at another of the world's great deserts. The Grand Canyon of Arizona—this time a desert of rock hewn and carved by Nature's handiwork into a thousand fantastic shapes. Down in the depths we see the Colorado river winding its way through the canyon. There is no place here where a man can make a home.

5.—LANDS OF SUNSHINE AND DEEP BLUE SKIES

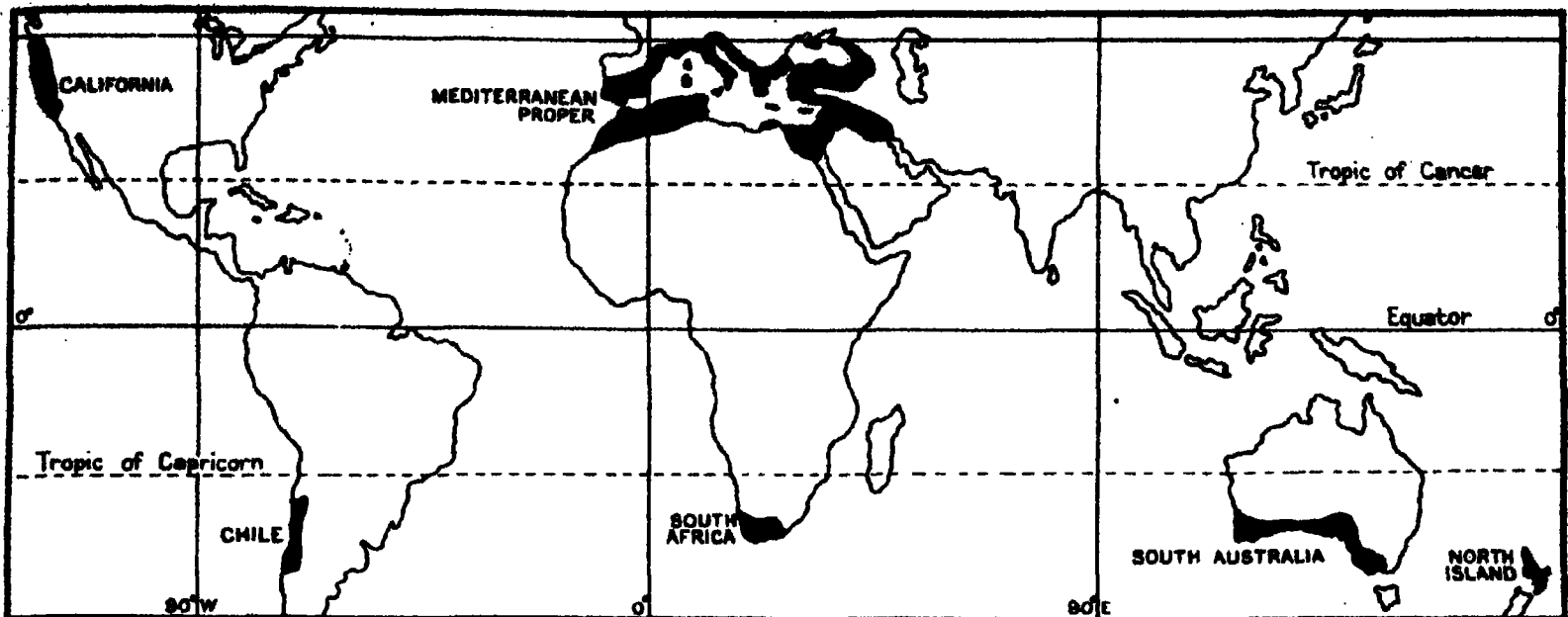


Fig. 7.—THE MEDITERRANEAN LANDS

LEAVING the barren desert lands behind, we come to countries where the climate is perhaps as near perfection as we are likely to find. We shall call these "Mediterranean Countries," because they all share the sunny mildness that we find on those flowering shores of the land-locked sea. Such countries all lie on the western sides of the continents, since the westerly winds bring moisture and warmth and

there is sufficient rain in winter and sun in summer to provide man with abundance of cereals, fruit, herds and flocks. These pleasant places of the earth include all the countries round the Mediterranean, Central California, Central Chile, the north-west corner of Africa, the south-west and south-east of Australia and North Island, New Zealand. Nature has not been too liberal in her provision of such lands.



E.N.A.

CITY OF FLOWERS AND FESTIVALS

Cannes—the beautiful, the gay—is one of the many Mediterranean towns that have become renowned as health resorts or holiday centres of entertainment. On its palm-fringed promenades you may hear, during the season, almost every European language, and mingle with a laughing crowd of famous or fashionable people from all the capitals of the world.

THE MEDITERRANEAN LANDS



Courtesy, Australian Govt.

FORESTS YIELDING RAILWAY SLEEPERS—AND EUCALYPTUS!

In the green heart of the Australian forest we find a similar climate to the one we have just left on the other side of the world. But where in Europe we should wander through the shade of chestnut, walnut or evergreen oaks, in Australia we find the hard trunks of jarrah—whence come our railway sleepers and paving-blocks—and the grey-green eucalyptus.

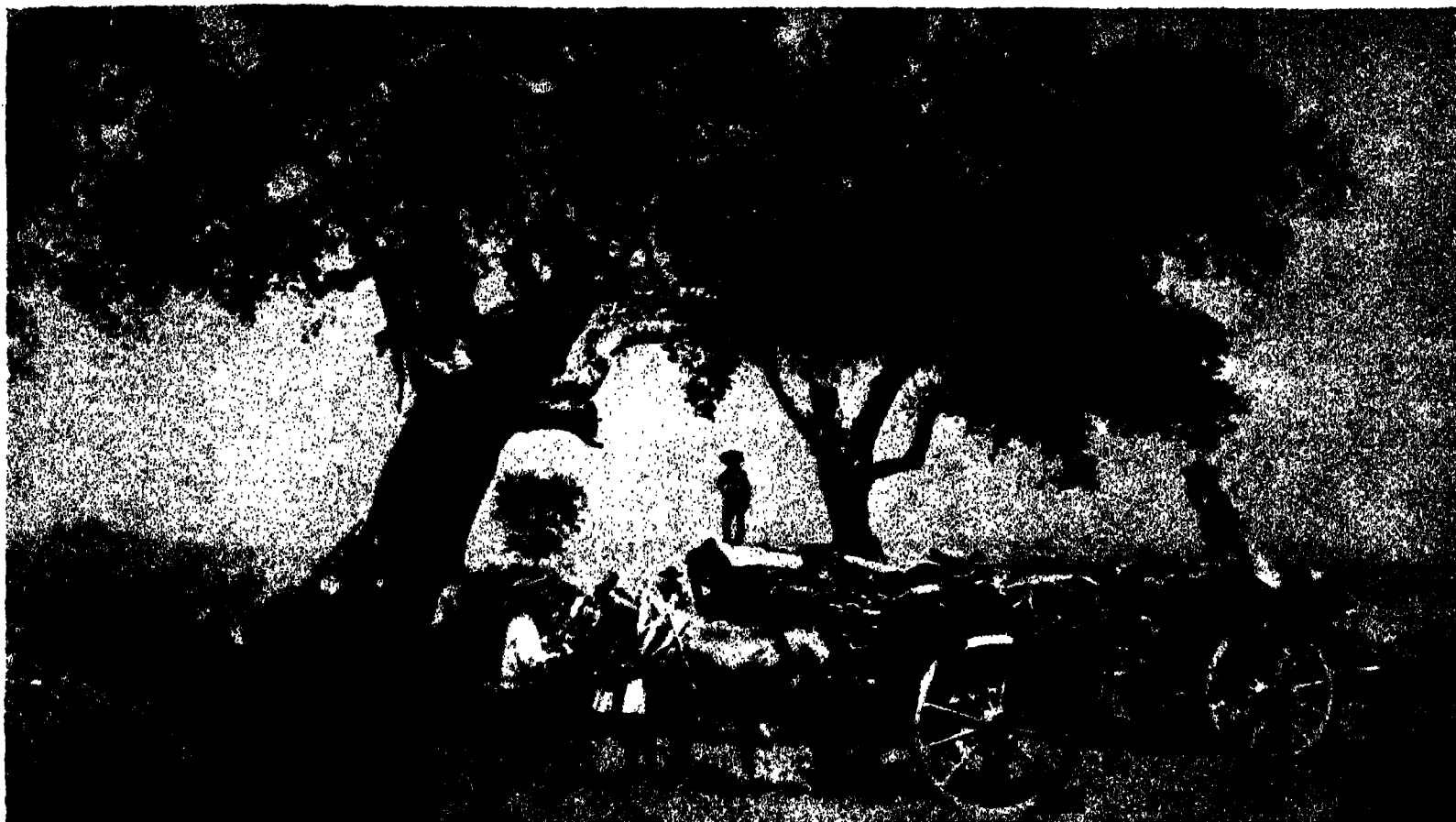


Courtesy, New Zealand Govt.

WHERE FERNS GROW AS BIG AS TREES

Travelling further East we come to North Island, New Zealand, where the lush undergrowth of the forests luxuriates in the mild moist air. Unlike most Mediterranean lands, North Island has no summer drought and so the green things grow to enormous size—as, for instance, in this picture, where the ferns are like young trees set in a scene of exquisite beauty.

THE MEDITERRANEAN LANDS



E.N.A.

WHERE THE CORK FOR OUR BOTTLES AND BATH MATS COMES FROM

Cork, for which we have found so many uses nowadays, is the porous outer bark of a tree that grows in Mediterranean countries. Once every five or ten years the cork tree is stripped of its valuable outer coat till the tree is 150 years old, when it ceases to be of much use. The bark is steamed and pressed before it is cut into sheets. This picture comes from Portugal.



E.N.A.

THE LADS OF VALENCIA IN AN ORANGE GROVE

The luscious summer fruits—oranges, grapes, figs, olives, lemons, apricots and peaches—all thrive in the long, dry Mediterranean summer. These Spanish youths are helping with the harvest of golden fruit. The glossy appearance of the orange leaves is due to a special waxy covering which prevents loss of moisture and enables the tree to live during the dry summer.

THE MEDITERRANEAN LANDS



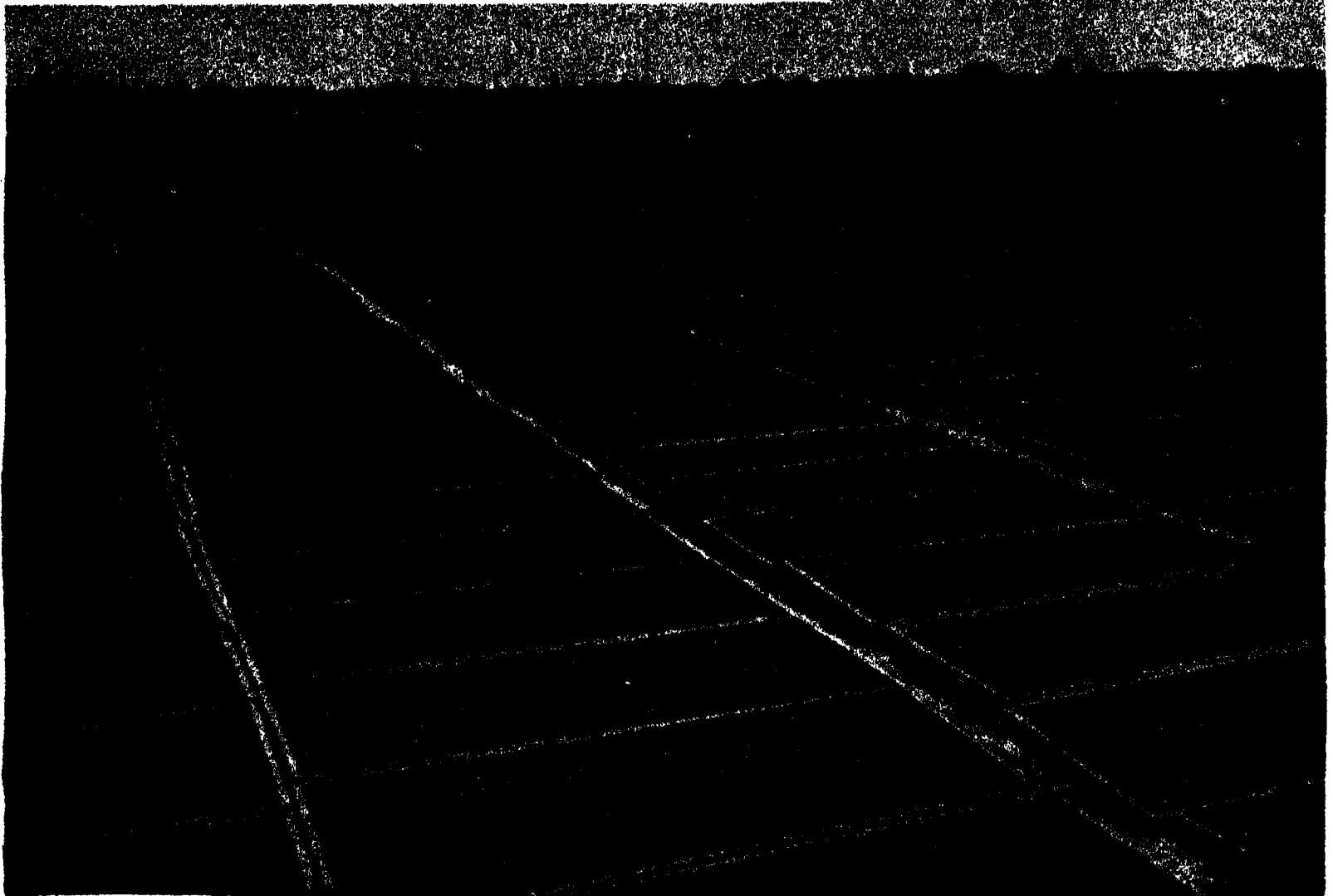
E.N.A.

AT WORK IN AN OLIVE GARDEN ON THE RIVIERA

On the sunny French Riviera grows the olive which, besides being a table delicacy, yields also olive oil. The Mediterranean peoples use olive oil instead of butter whenever possible. Butter is difficult to produce, because the hot summers dry up the grass so that there is not enough pasture either to keep many cows or to produce rich, creamy milk.

MILES AND MILES OF PRUNES

The humble prune begins life as a special kind of plum that is now grown chiefly in California. The enormous crop is gathered and spread on shallow trays to dry in the sun. As you may imagine, this industry can only be carried on where the weather remains dry for months at a time. In the same way grapes are transformed into raisins. Much dried fruit also comes from Australia.



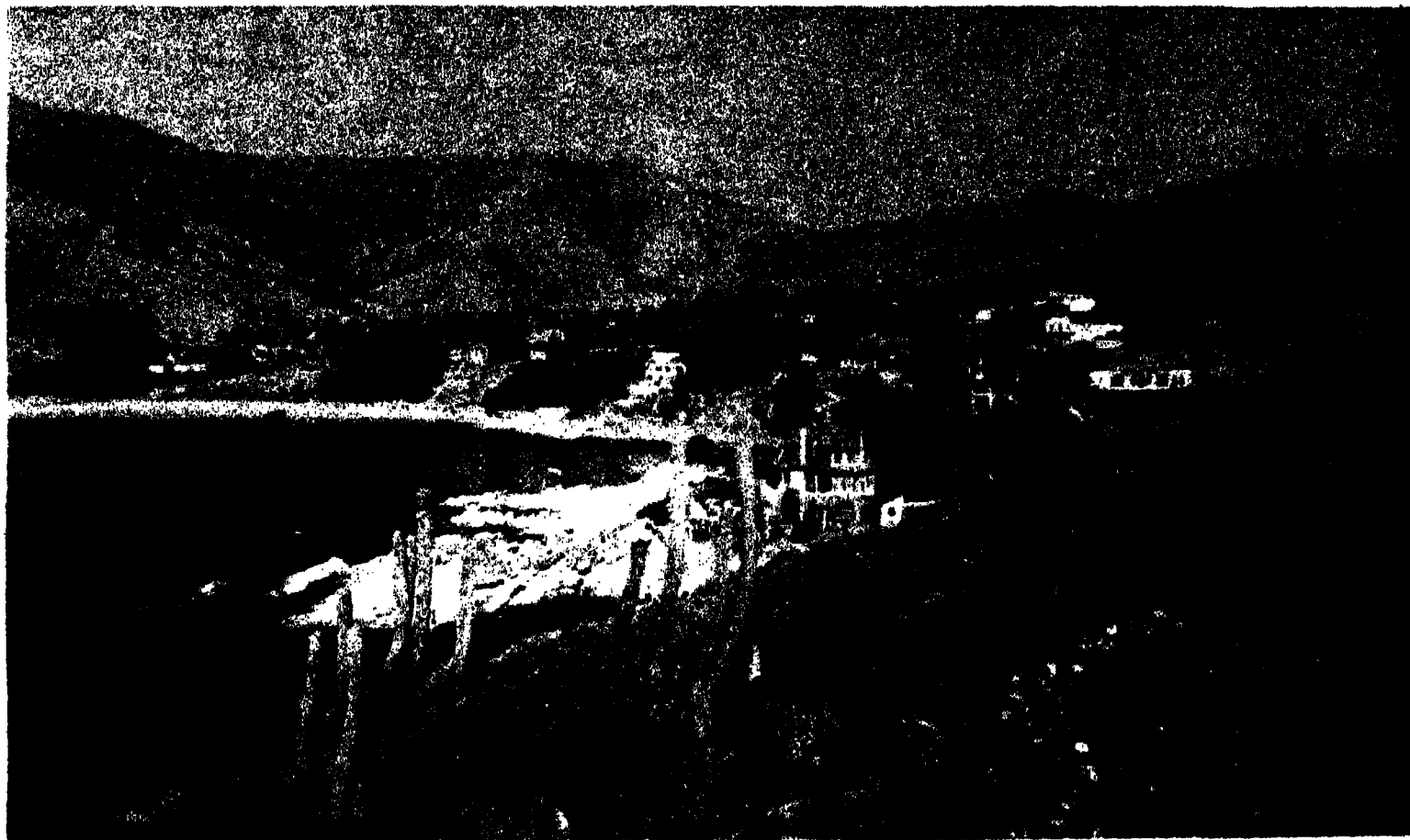
E.N.A.

THE MEDITERRANEAN LANDS



THE JUICE-LADEN GRAPES OF THE CAPE

Since the grape-vine was persuaded to grow on the Cape the colony produces ever-increasing quantities of wines. Here is a view of the ripe clusters of grapes ready to be sent to the press. The grapes grow on short bushes—not the usual vines.



CHILE'S WARM AND SUNNY RIVIERA

Along the coast of Chile are many bays like this one, carpeted with flowers, sheltered by the hills and facing westward the blue depths of the South Pacific. The strange-looking plants in the foreground are cacti, which grow quite high.

THE MEDITERRANEAN LANDS



NOT SO STUBBORN WHERE FOOD IS CONCERNED

The mule is not so particular about his food as the horse and so takes his place in countries where rich grass and hay is scarce. In addition, mules are surer footed on the steep, stony paths of the countryside. These Spanish mules look positively benevolent under their enormous bundles of forage as they go to market.



WHERE THE GOAT IS BROUGHT TO ONE'S DOOR AND MILKED TO ORDER

Because the goat can live on poorer grass than the cow, goat's milk is more common in Mediterranean lands. Here you see a Spanish milkmaid with her flock in the courtyard of a private house delivering milk as fresh as milk can possibly be.

6.—LIFE IN THE PRAIRIE LANDS

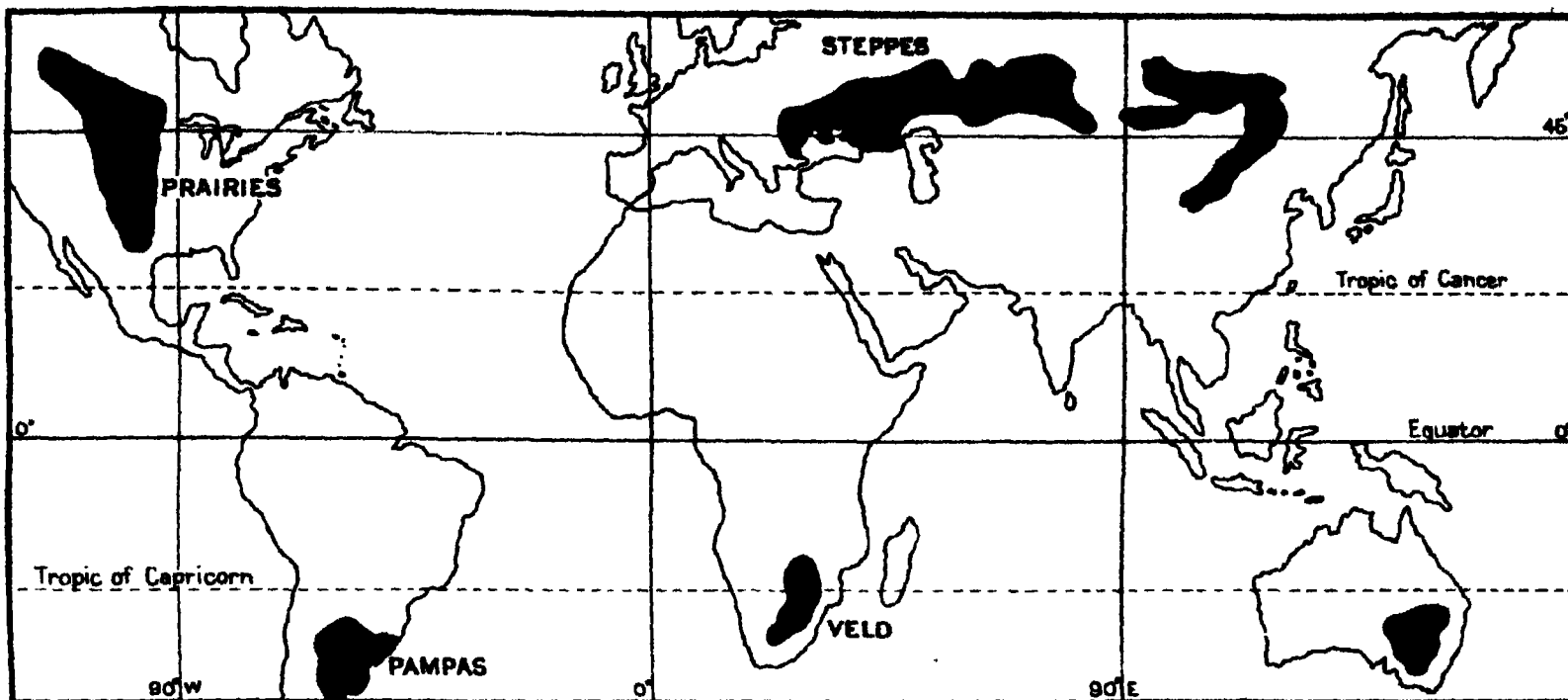


Fig. 8.—THE PRAIRIE LANDS

THERE are grasslands all over the world, sometimes stretching for thousands of miles in an unbroken sweep. These are the prairies and pampas of America, the veld of Africa, and the steppes of Europe and Asia. People who live in the prairies make their living chiefly by keeping cattle. Where the rainfall is fairly heavy crops are grown, especially wheat.



Courtesy, Canadian National Railways

THE FORMER LORDS OF THE PRAIRIES

Before the coming of the white man, countless bison roamed in great herds over the grassy prairies of America. But the white man killed off so many of these animals that they nearly became extinct. The picture shows two enormous bison in Wainwright Park, Alberta, which has been set aside by the Canadian Government as a breeding ground and preserve.

LIFE IN THE PRAIRIES



E.N.A.

A RACE TRACK ON A FROZEN RIVER

The picture shows the frozen St. Lawrence upon which a race track has been constructed. In certain parts of Canada the temperature becomes so low in the winter that the rivers and harbours become frozen, and put an end to transport.



FISHING WITH NETS IN A FROZEN LAKE

When lakes and rivers are frozen and covered with snow, normal fishing is impossible. Holes have to be cut in the thick ice and baited nets let down to the water below. Then the fisherman has to wait patiently until he draws up the net again.

LIFE IN THE PRAIRIES



Courtesy, Royal Hungarian Legation

WHERE OXEN ARE STILL USED FOR PLOUGHING

Where great machines have not been universally introduced, primitive oxen teams are still used for ploughing as shown in this Hungarian scene. Tethered together in pairs, teams of four oxen pull these hand-guided ploughs over thousands of acres.



E.N.A.

HUGE WHEELS THAT SINK INTO RUTS TWO FEET DEEP

In the level plains of South America heavy rains turn the soft soil into a sea of mud in which cart wheels make ruts, often two feet deep. The carts are therefore provided with huge wheels which keep the axles off the ground in wet weather.

LIFE IN THE PRAIRIES



Courtesy, South African Railways

FROM SUN-UP TO SUNDOWN ON THE AFRICAN VELD

On the veld, those wild open spaces of South Africa, the rearing of sheep and cattle is the main occupation. It is a hard but healthy life, involving many long hours in the saddle, since the cattle often wander great distances in search of good pastures.



Courtesy, Australian Government

A FLOCK OF SHEEP IN A STRANGE SETTING

You would not think that sheep could thrive in such a place as this, but saltbush, which is the strange-looking vegetation which we see in this picture, actually makes excellent fodder for sheep. In the Murray Darling Basin it grows abundantly

7.—WHERE THE LEAVES FALL IN WINTER

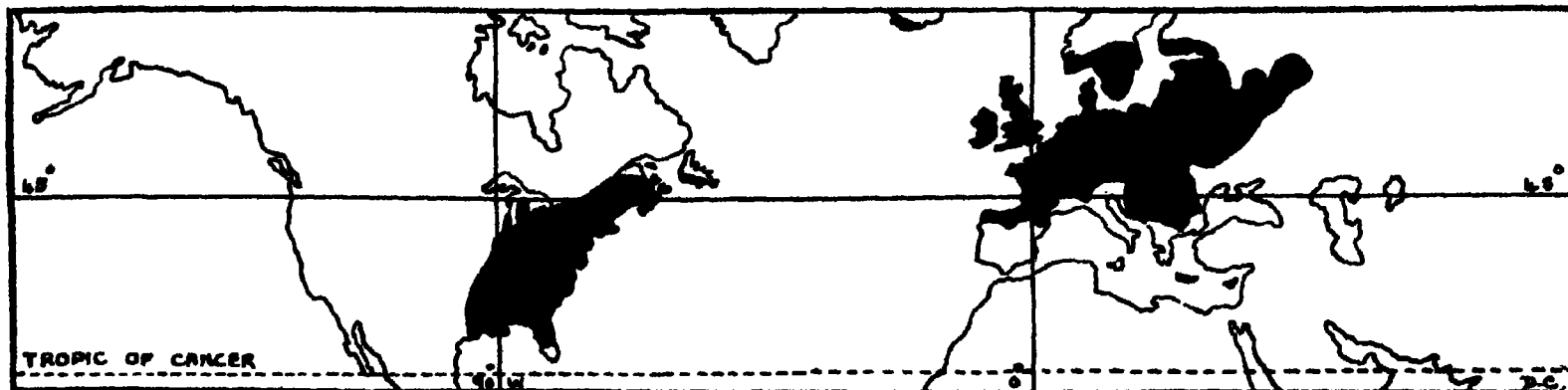


Fig. 9.—WHERE THE LEAVES FALL IN WINTER

BY far the greater number of our trees lose their leaves in autumn and similar trees grow in Western and Central Europe and in the south-east of North America. The abundant moisture and mild temperature of these parts of the world allow such trees as the oak, beech, chestnut, elm, etc., to grow to their finest.

Each autumn we may see at every turn—on

downland ridge or sheltered valley—the splendid pageant of the waning year. This blaze of colour comes, as we know, from the dying leaves shed by the trees to prevent loss of moisture during their long winter rest. The glory of autumn is, therefore, not so much a symbol of decay as a voluntary sacrifice to the young spring already on its way. Nature uses the fallen leaves as manure.

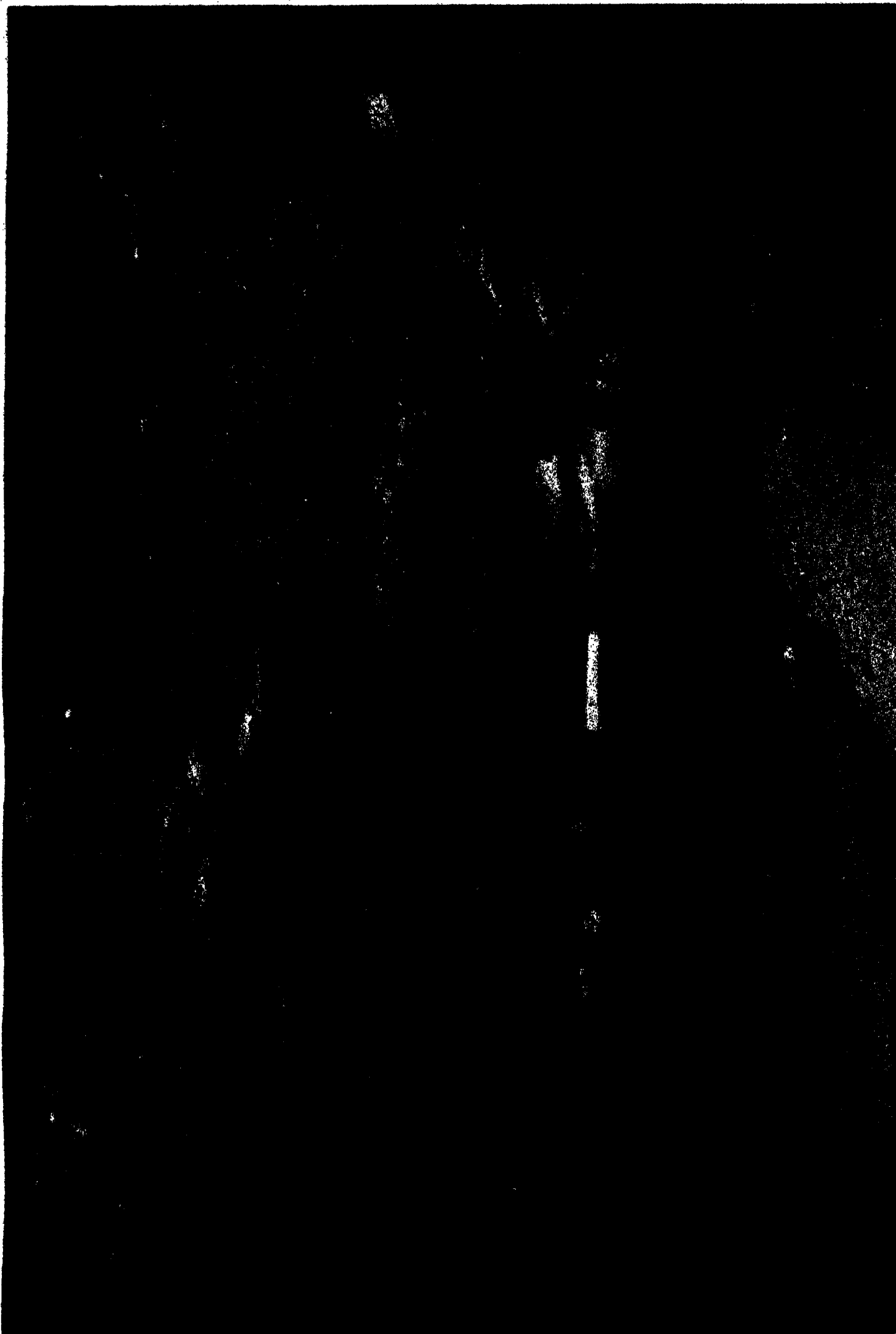


Courtesy, Great Western Railway

THE MAGIC OF HOAR FROST

Jack Frost has been abroad in this oak forest and turned it into a fairyland, where the sun plays upon the tiny frozen crystals.

WHERE THE LEAVES FALL IN WINTER



SUMMER IN LOVELY BURNHAM BEECHES

The beech forest is a delight in spring, with its long buds gleaming pink in the sun, a welcome shelter in the heat of summer, and a flaming glory in the autumn.

WHERE THE LEAVES FALL IN WINTER



E.N.A.

A RICH HARVEST TO GO UP IN SMOKE

Tobacco is an important crop in the United States. Here is a fine crop on a Kentucky plantation laid out for drying.



E.N.A.

FLEECED PIGS IN THE MARKET PLACE

These curious woolly coated creatures are pigs. They are the most popular breed of pigs in Yugo Slavia. This picture was taken in the market place in the town of Novi Sad, the centre of Yugo Slavia's very important pig breeding industry.

WHERE THE LEAVES FALL IN WINTER



Courtesy, Canadian Immigration Office

FROM SAP TO SUGAR

This man is collecting the sap from the maple trees and turning it into sugar in the old fashioned way, by heating it in a large metal bath over a wood fire. The picture was taken in a Canadian forest. The maple leaf is Canada's national emblem.

8.—LIFE IN THE DENSE NORTHERN FORESTS

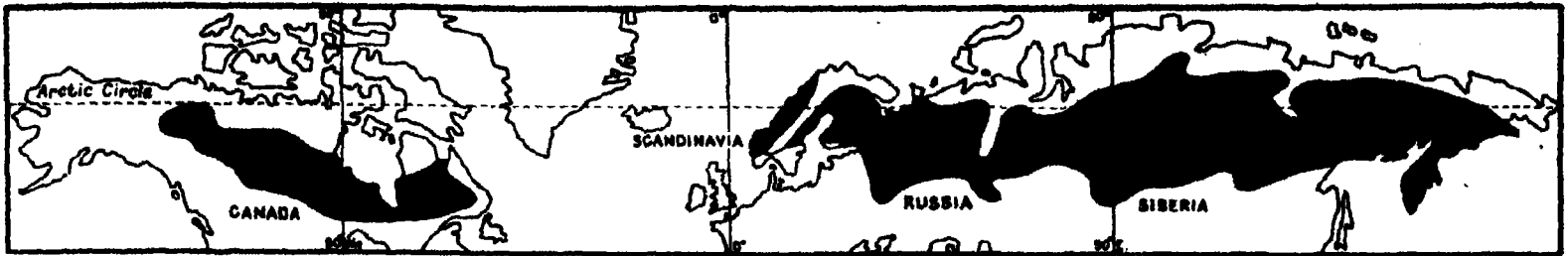
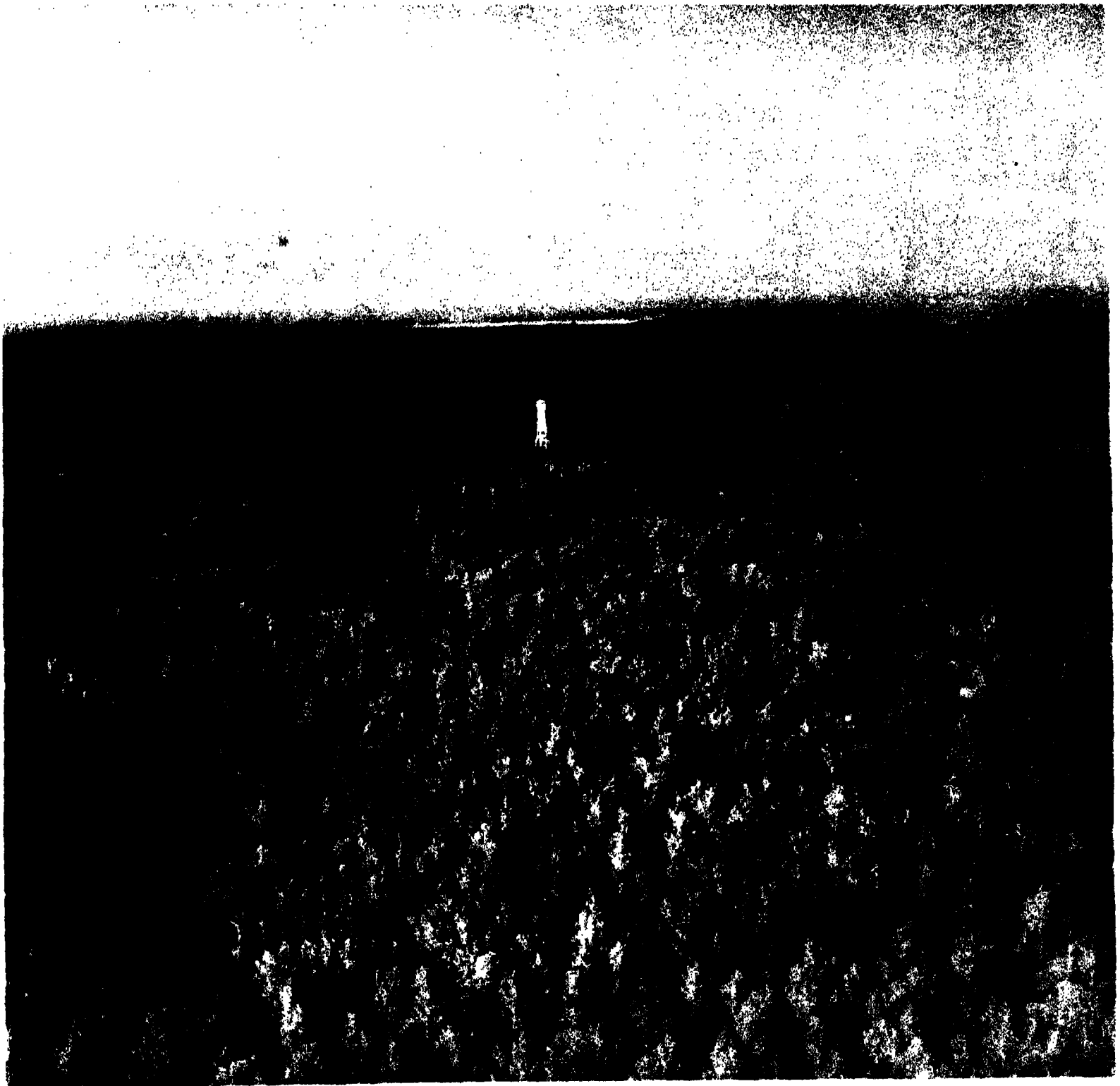


Fig. 10.—THE DENSE NORTHERN FORESTS

THE northern forests form a great belt round the land parts of the globe in the northern hemisphere, but, except in a few places, do not reach the northern shores. The most important areas are in Canada, Sweden, Russia, and Siberia, in all of which lumbering flourishes.

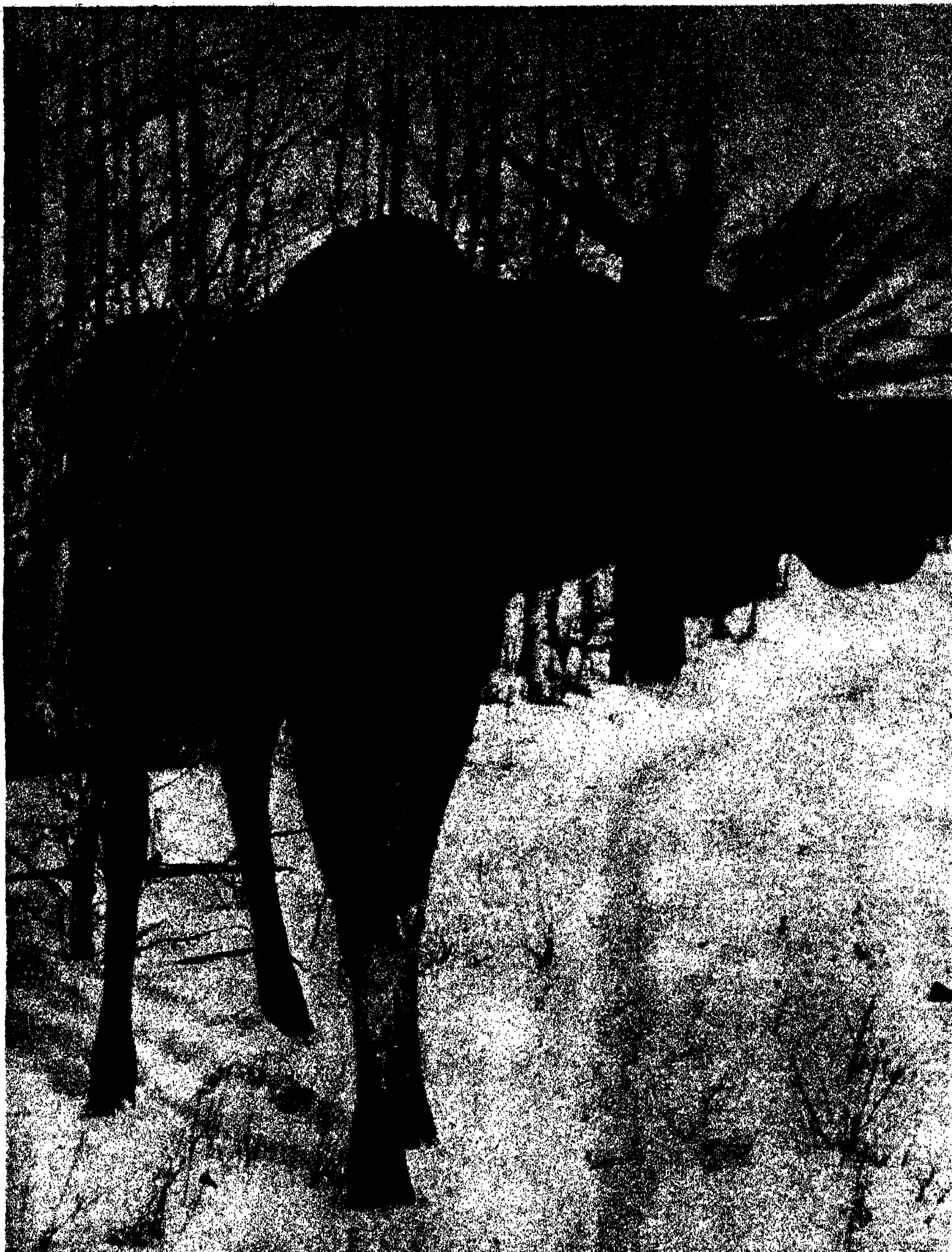


Courtesy, Canadian Government

THE LONELY STEEL TOWER IN A WORLD OF FOREST

Without the aeroplane this picture of a northern forest could never have been obtained, as these forests extend for thousands of square miles. In the centre is a steel tower erected for observation purposes in man's conflict with the all-consuming forest fires. The leaves of the pines and firs are mere needles, their conical shape resisting the strong wind.

THE DENSE NORTHERN FORESTS



Courtesy, Governor and Committee, Hudson Bay Company

THE "WOOD-CROPPER" OF THE FOREST

The moose or elk is a true forest animal: its long legs and short neck compelling it to feed on trees and bushes except where grass is very long. The animals of the forest are numerous, for there is plenty of good food even in the winter.

THE DENSE NORTHERN FORESTS



Courtesy, Governor and Committee, Hudson Bay Company

A BLACK BEAR IN THE TREE-TOPS

In these forests bears abound—brown, black, and grisly. They can climb trees and eat large quantities of vegetable food, but will also feed on fish and even insects. They are particularly fond of pine seeds. During the winter they go to sleep.

THE DENSE NORTHERN FORESTS



Courtesy, Governor and Committee, Hudson Bay Company

A BEAVER FELLING A TREE

This funny little animal fells trees, builds "lodges," and often makes a nuisance of himself by damming up rivers. Besides the beaver, the most valuable of the forest animals are the fur-bearing ermine, sable, fox, and mink, used for ladies' coats.

THE DENSE NORTHERN FORESTS

AN ESKIMO TURNS TRAPPER

The Eskimo is now employed as a hunter and furnished with a gun. The fur-bearing animals are pursued by hunters and trappers during the winter season, when the fur of the animals is found in its best condition.

THE TRAPPER'S TENT BURIED IN MID-WINTER SNOWS

A Canadian trapper snapped outside his tent, which is pitched amid the snow in the depth of the forest. The white trapper of to-day is the successor of those intrepid Frenchmen whose search for furs gave us our earliest knowledge of the interior of Canada. The animals are shot or trapped.



Courtesy, Governor and Committee, Hudson Bay Company



Courtesy, Canadian Pacific Railway

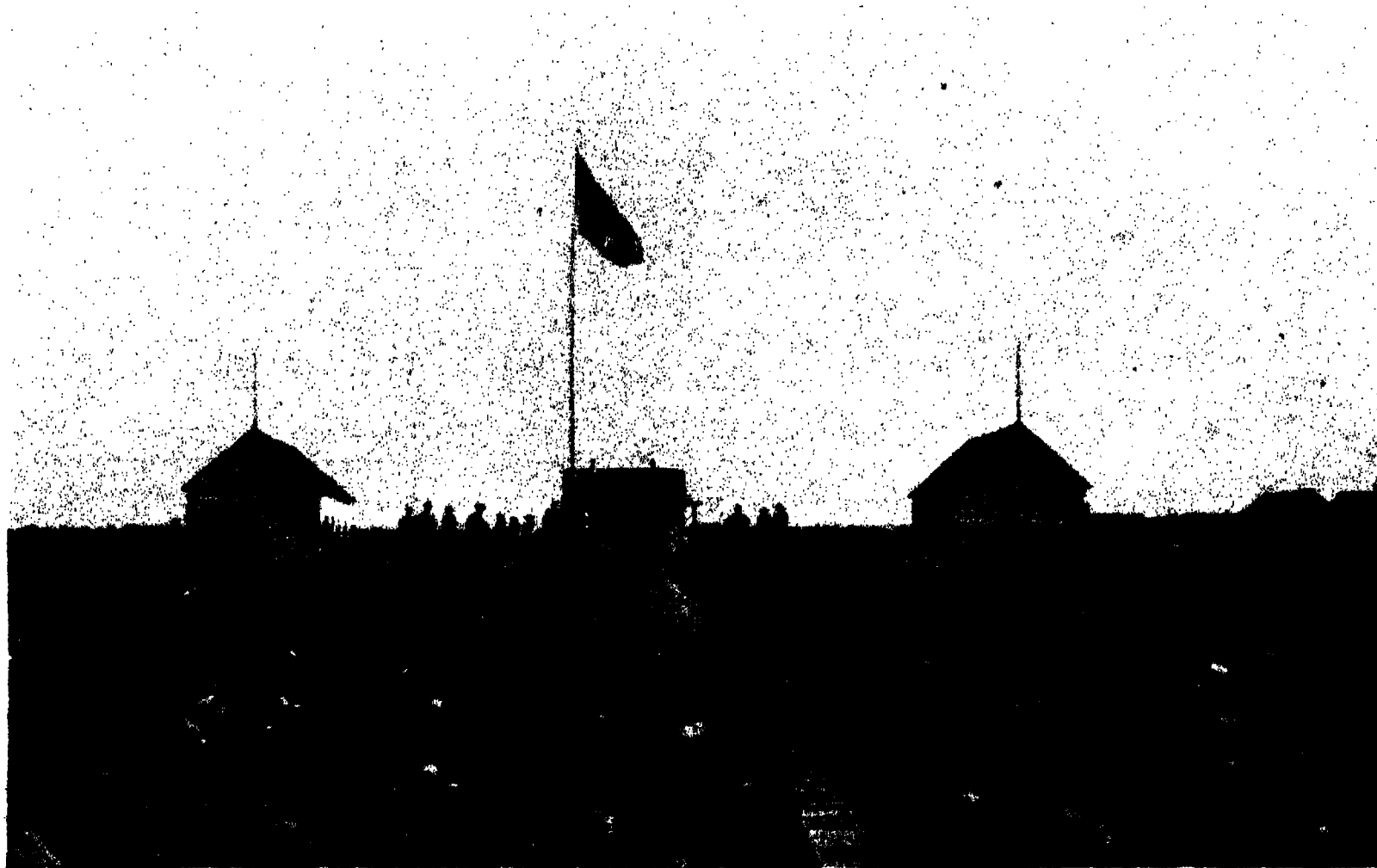
THE DENSE NORTHERN FORESTS



Courtesy, Governor and Committee, Hudson Bay Company

BOAT-LOADS OF FURS

When the ice begins to melt the furs are taken by sledge or boat to one of the lonely posts of the Hudson Bay Company.

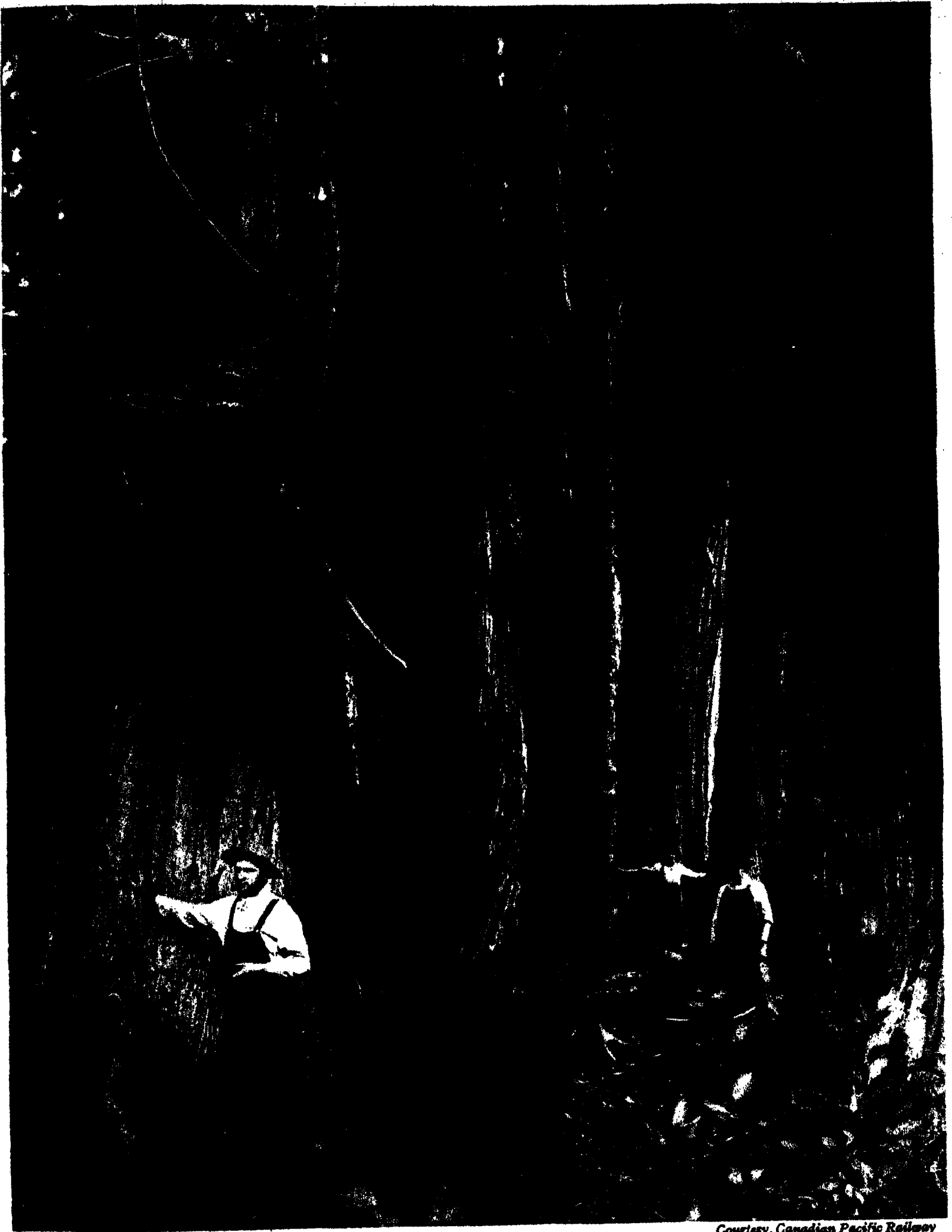


Courtesy, Governor and Committee, Hudson Bay Company

A LONELY POST OF THE HUDSON BAY COMPANY

Here the furs are sorted into varying grades. The post is like a little village, with a house for the manager, outbuildings for cows and chickens, and a store filled with miscellaneous articles for sale. Over all floats proudly the company's flag.

THE DENSE NORTHERN FORESTS



Courtesy, Canadian Pacific Railway

CHOOSING TREES FOR FELLING IN A CANADIAN FOREST

In parts of the forest in Europe, Asia and America, near rail or motor routes, or where there are streams to float timber, the lumber industry flourishes. The trees to be felled are selected and marked carefully before the snow begins to fall.

THE DENSE NORTHERN FORESTS



Courtesy, Canadian Government

SHIP-LESS CARGOES ON RUSHING STREAMS

In Canada the trees are felled in winter and the logs are dragged on trucks running on roughly laid rails or are hauled over the snow, to some river or lake where they are dumped to await the spring. When the ice melts the logs float downstream.



Courtesy, Swedish Travel Bureau

TUGS TOWING HUGE RAFTS ON THE BALTIC

In a sea like the Baltic, it is necessary to raft the timber or it would drift over a wide area. Powerful tugs are employed to tow these immense rafts from the north of Sweden to the mills in the south, where they will be cut into planks.

9.—LIFE IN THE COLD DESERTS

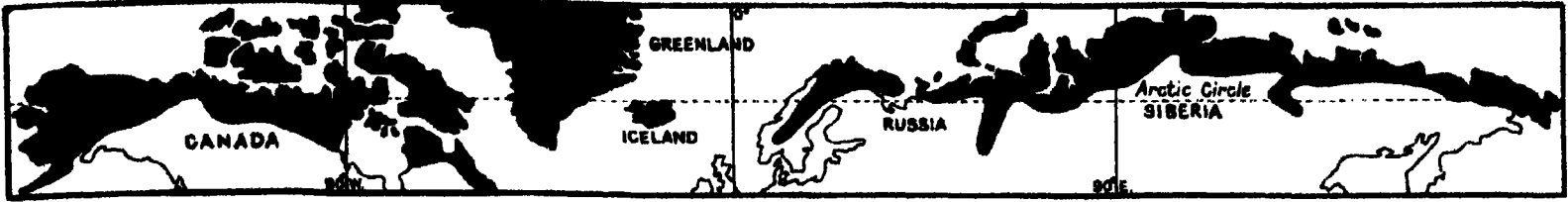


Fig. 11.—THE COLD DESERT LANDS

THE cold deserts, or "tundra," are found on the bleak edge of the northern shores of both the new and the old world. It is a life of snows and bitter cold, but summer brings a crowded hour of colour, warmth and flowers. For the greater part of the year the land is hidden under snow and swept by bitter blasts, but in the summer, as seen in the inset, it becomes a kind of prairie decked with flowers, mosses and lichens. As the summer is so short, the moss and lichen are collected and stored for fodder for the animals in the long winter months, when everything will be covered by a mantle of snow.



Courtesy, Swedish Travel Bureau

INVALUABLE TO THE LAPP IN LIFE AND DEATH

The reindeer is essential to the dwellers in the "tundra" of Europe and Asia. They use its milk for food, its hide for clothes and shoes, and when it is alive it is their beast of burden. The chief dwellers of the cold deserts are Lapps and Finns in Europe, Ostyaks, Samoyeds and Yakuts in Asia, and Eskimos in America. *Inset: gathering moss and lichens.*

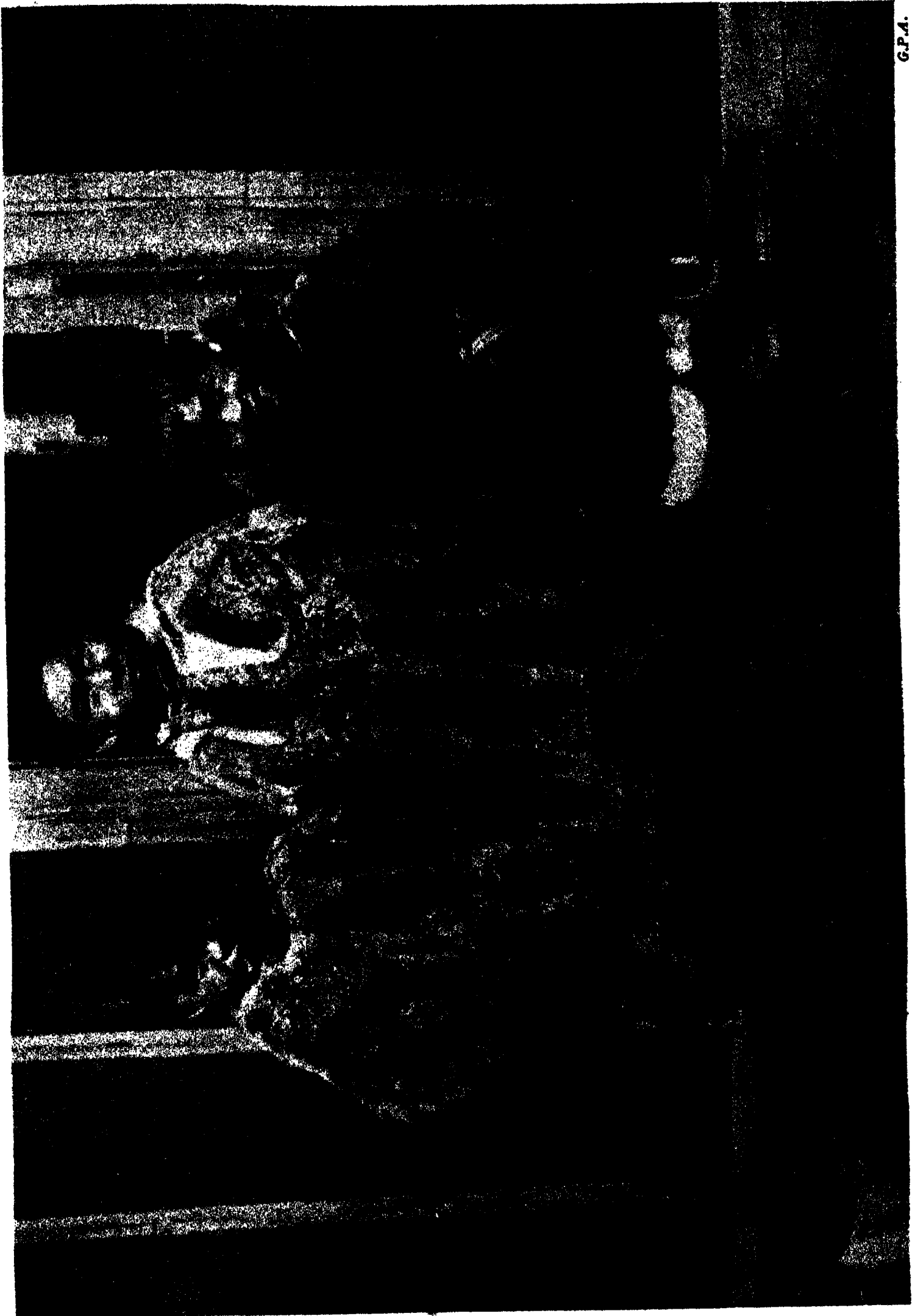
LIFE IN THE COLD DESERTS



Courtesy, Canadian Govt.

ESKIMO SEAL HUNTER IN HIS NATIVE KAYAK

From the seal, the Eskimo obtains food, oil for his lamp, and skins for his clothes and summer tent. He has no domesticated food animals, and lives chiefly on fish.



G.P.A.

THREE HAPPY ESKIMO CHILDREN DRESSED IN THEIR FATHER'S CATCH OF SEAL SKINS

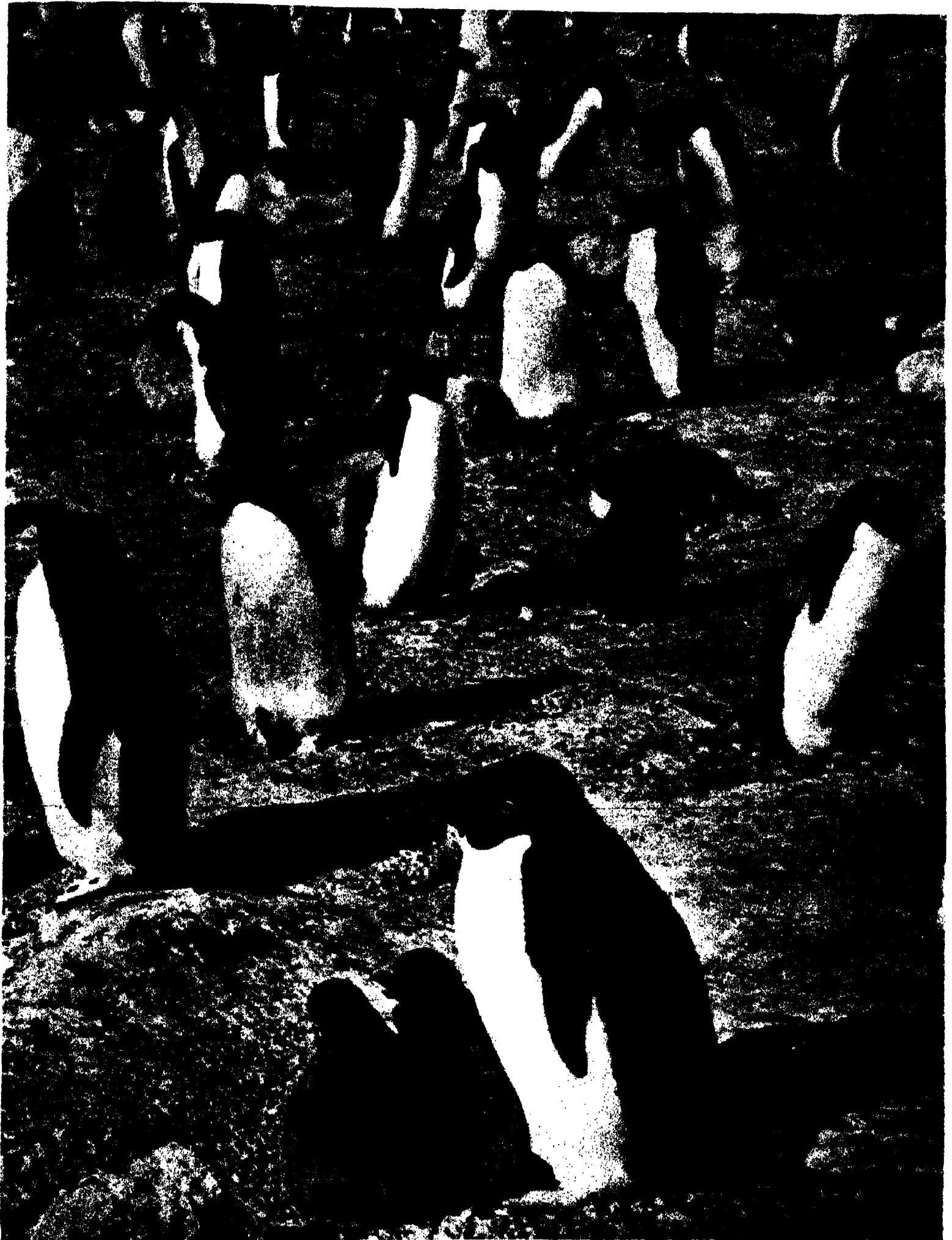


Courtesy, Canadian National Railways

BORN ON THE LONG TRAIL THROUGH ALASKA—A HUSKY'S PUPS

The pups shown in this photograph were born when their mother was on trail through Alaska, and this is the way they were cradled and carried to their destination. An Eskimo's dog pulls his sledge and can be fed on exactly the same kind of food that he himself eats. There are no such things as dog biscuits or dainty morsels in Alaska.

10.—THE LAND OF ICE AND SNOWS



E.N.A.

A PENGUIN ROOKERY IN THE ANTARCTIC

In the vast Antarctic penguins and seals are the only creatures living on land by the waterside. Penguins foregather in colonies of as many as thirty to forty thousand. The shadows in this land of ice and snow are very black and clear-cut, and the penguin with his sharp contrast of black and white is very difficult to see at any distance. Penguin eggs are a delicacy.

THE LAND OF ICE AND SNOWS



G.P.A.

A WHALER'S BIG CATCH

Far away in the Arctic Circle the whalers plough their lonely way in search of the mighty mammoths of the sea. The whales are hunted for the valuable oil which is extracted from them—the best quality being used as burning oils and for soap-making. The flesh of the whale is of very little use, except in Japan where it is used as meat. Whales eat small fishes.

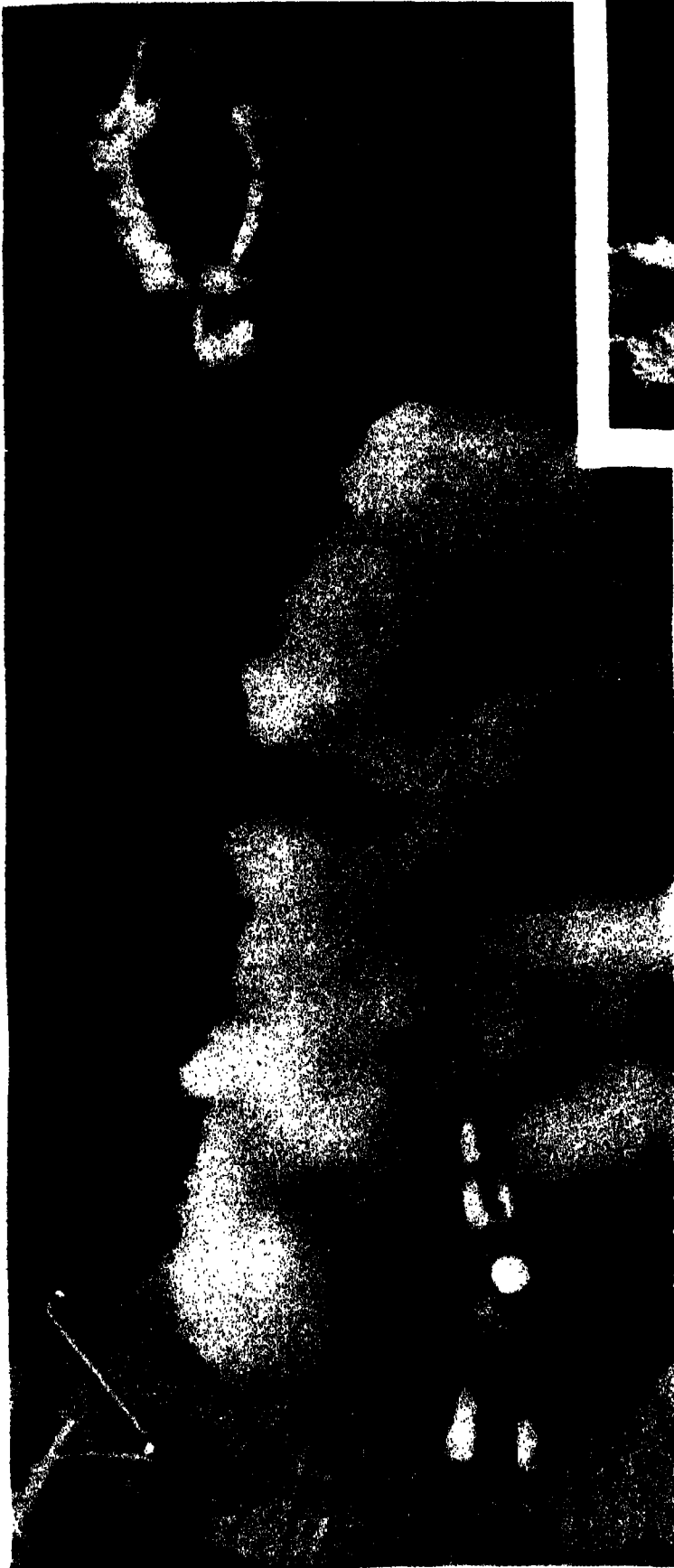
THE LAND OF ICE AND SNOWS

HOW A WHALE IS CAUGHT

These remarkable pictures show the firing of a harpoon, the tremendous dive of the harpooned whale, and towing the catch to port. The gun being fired is an explosive harpoon of 120 lb. Great skill is necessary to catch the whale properly, and bring him safely to the whaler.



G.P.A.

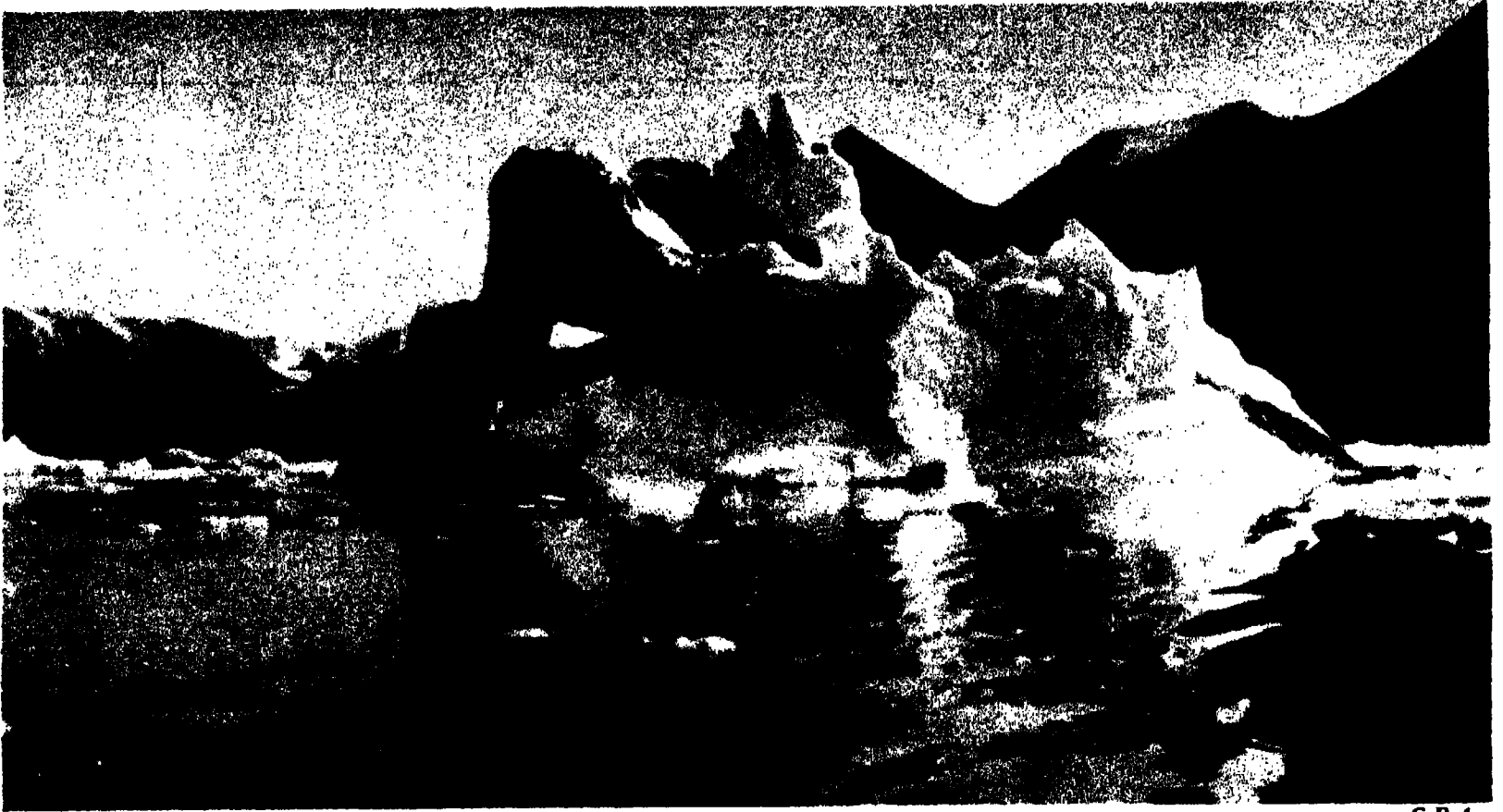


G.P.A.



G.P.A.

THE LAND OF ICE AND SNOWS



G.P.A.

THE ICE FIELDS OF THE ARCTIC

The barren ice fields of the North Pole are bleak and uninhabitable—a desolate land of rock and dangerous icebergs.



G.P.A.

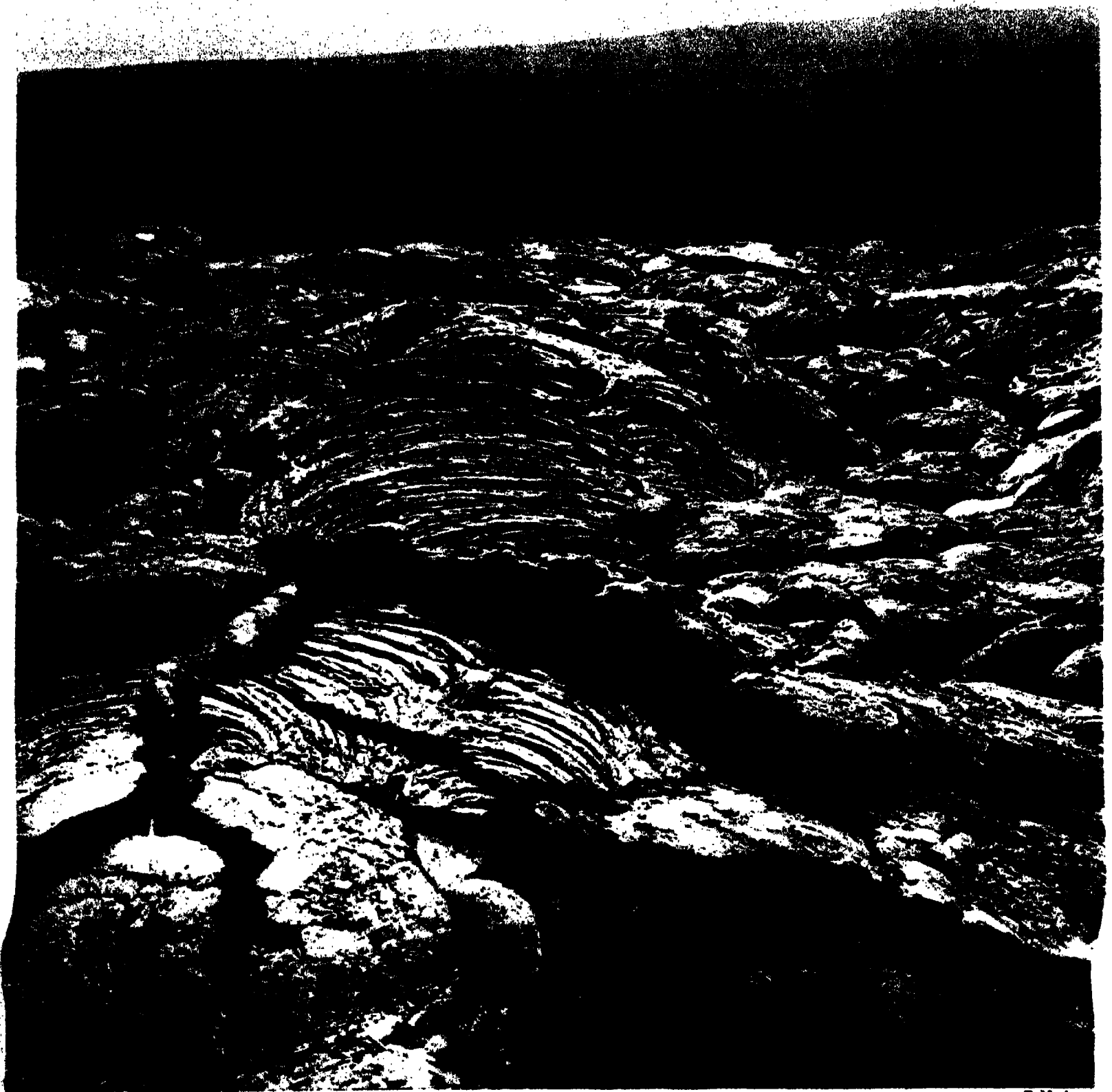
FREE FOR A BRIEF SPELL FROM THE GRIP OF ICE

The interior of Greenland, like the Antarctic Continent, is sheathed with ice, but at one or two places round the coast nature relents, for there are small areas that are free from ice for part of the year. This picture shows a tiny village where the Eskimos are changing their habits, living, for instance, in wooden houses and using gramophones and sewing machines.

11.—THE OCEAN OF A THOUSAND ISLES

IN the Pacific Islands there are thousands of islands, some of them so tiny that they cannot even be shown on a map. Amongst the largest and best known is Hawaii, where the natives dance, to the rhythm of the guitar, dances which have found their way to the dance halls of

the capitals of the western world. Honolulu, famous for the beauty of the native women and the magnificent physique of the men, has a delightful climate which draws visitors from all over the world to its sunny shores, and especially the United States of America, its nearest neighbour.



E.N.A.

THE LAVA FLOOR OF VOLCANIC HAWAII

Hawaii is an island of striking contrasts—beauty on the one hand and volcanic desolation on the other. This remarkable picture shows the extraordinary laval floor below the 600-feet high crater, which can just be seen in the background.

THE OCEAN OF A THOUSAND ISLES



E.N.A.

BREAD-FRUIT IN HAWAII

Hawaian plants include coconut, bananas, and bread fruit. The latter, about the size of a pineapple, grows on a tree, and was once the staple food of the natives. In these days it is being displaced by flour and other ready-made foodstuffs. It is at its best when weighing about ten pounds and not quite ripe : it is eaten when baked or roasted in underground pits.



E.N.A.

CUPS, PLATES AND SAUCEPANS OF LEAVES

In some of the Pacific Islands a number of plants with roots like potatoes are also found, of which taros and yams are the most important. While the foot of the taro is used as food, the huge leaves are folded into cups, plates, and even saucepans.

THE OCEAN OF A THOUSAND ISLES



G.P.A.

A FIJIAN FISHERMAN IN HIS CURIOUS CRAFT

This looks a topsy turvy craft, and yet this Fijian fisherman can travel many miles and at considerable speed without a spill.

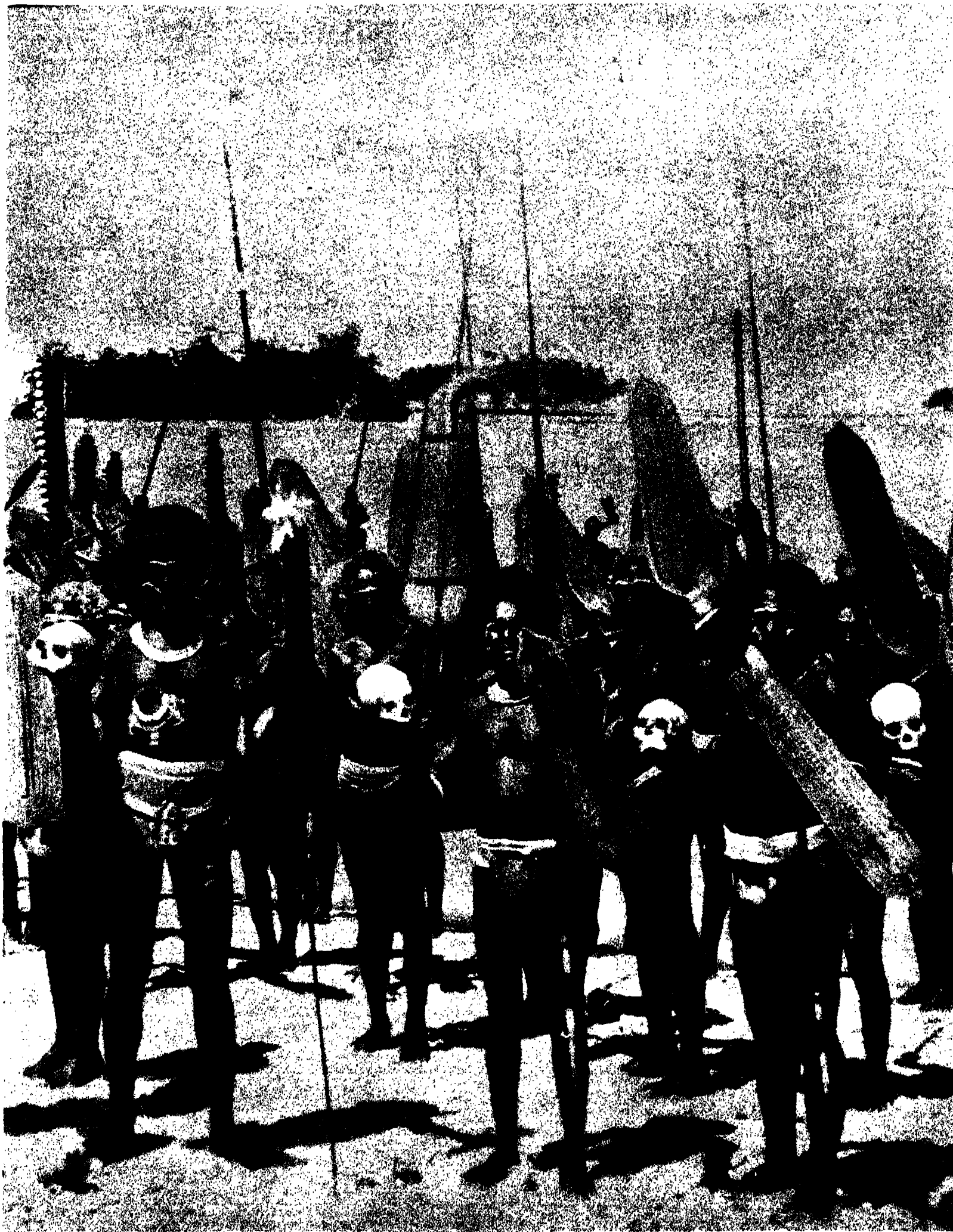


E.N.A.

A BLUE LAGOON—ENCIRCLED BY PALMY CORAL REEFS

Fish is an important part of the "meat" food in the Pacific Islands. The coconut palms in the background of the picture are growing on low coral reefs which encircle the lagoon. The fibre, or covering, of coconuts is used for matting.

THE OCEAN OF A THOUSAND ISLES

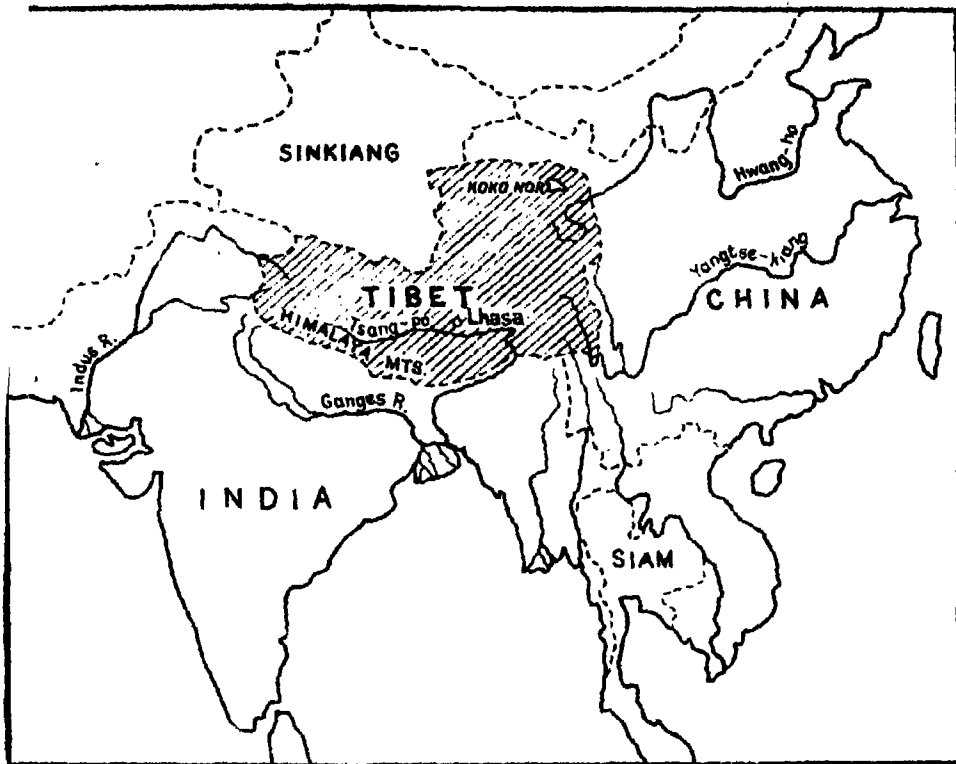


HEAD HUNTING—A NATIONAL SPORT IN THE SOLOMON ISLANDS

G.P.A.

These stalwarts are the champion head hunters of the South Seas. They know nothing of Christianity or any other religion beyond Uri-Uri, or devil worship—a sort of god of wrath who causes fires, shipwrecks, storms, sickness, or even death.

12.—THE ROOF OF THE WORLD



THE mountains of the world are beautiful and often awe-inspiring, but people seldom make their homes on them—they prefer to live in the smiling, fertile valleys at the foot of them. In some places, however, there are flat topped mountains, known as plateaus, such as Tibet in northern India, where the weather-beaten nomads wander on the desolate tableland. Life is extremely hard, and only hardy animals, such as the yak, can exist and be of service to man in these conditions.

Fig. 12.—THE HIGH PLATEAUS



E.N.A.

WHERE CROPS CLIMB UP THE MOUNTAIN SLOPES

The river in the background waters this fertile valley at the foot of the Andes in South America. Notice how crops are being grown on the lower slopes of the mountains. At each successive height different kinds of vegetation are found.

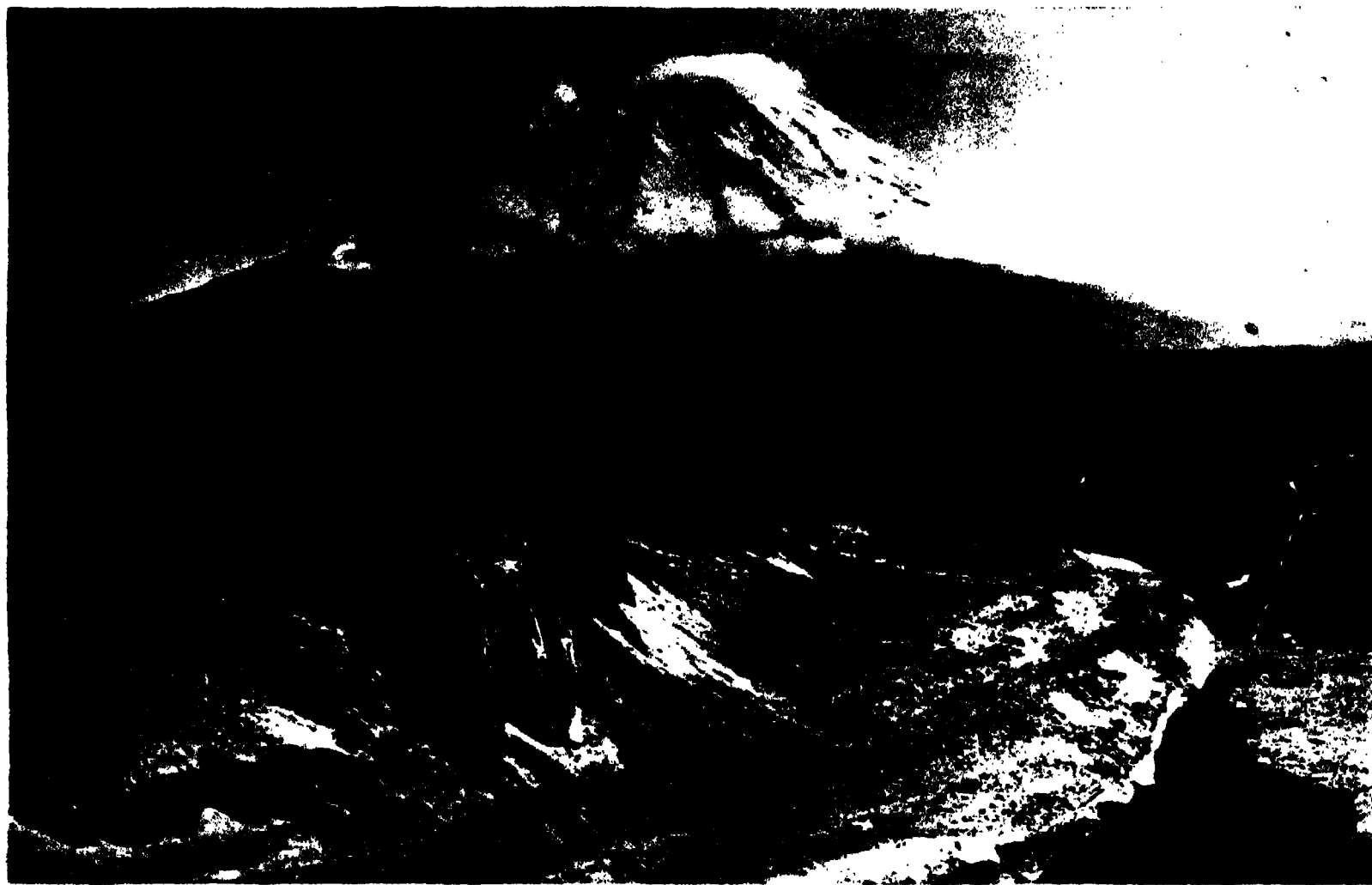
THE ROOF OF THE WORLD



E.N.A.

THE FOLK WHO WANDER ON THE TOP OF THE WORLD

In places where there is sufficient grass, groups of nomads, who live in tents made of the hair of the yak, wander about with their sheep and ponies. Their easily moved tents are low on the ground as a protection against bitter winds.

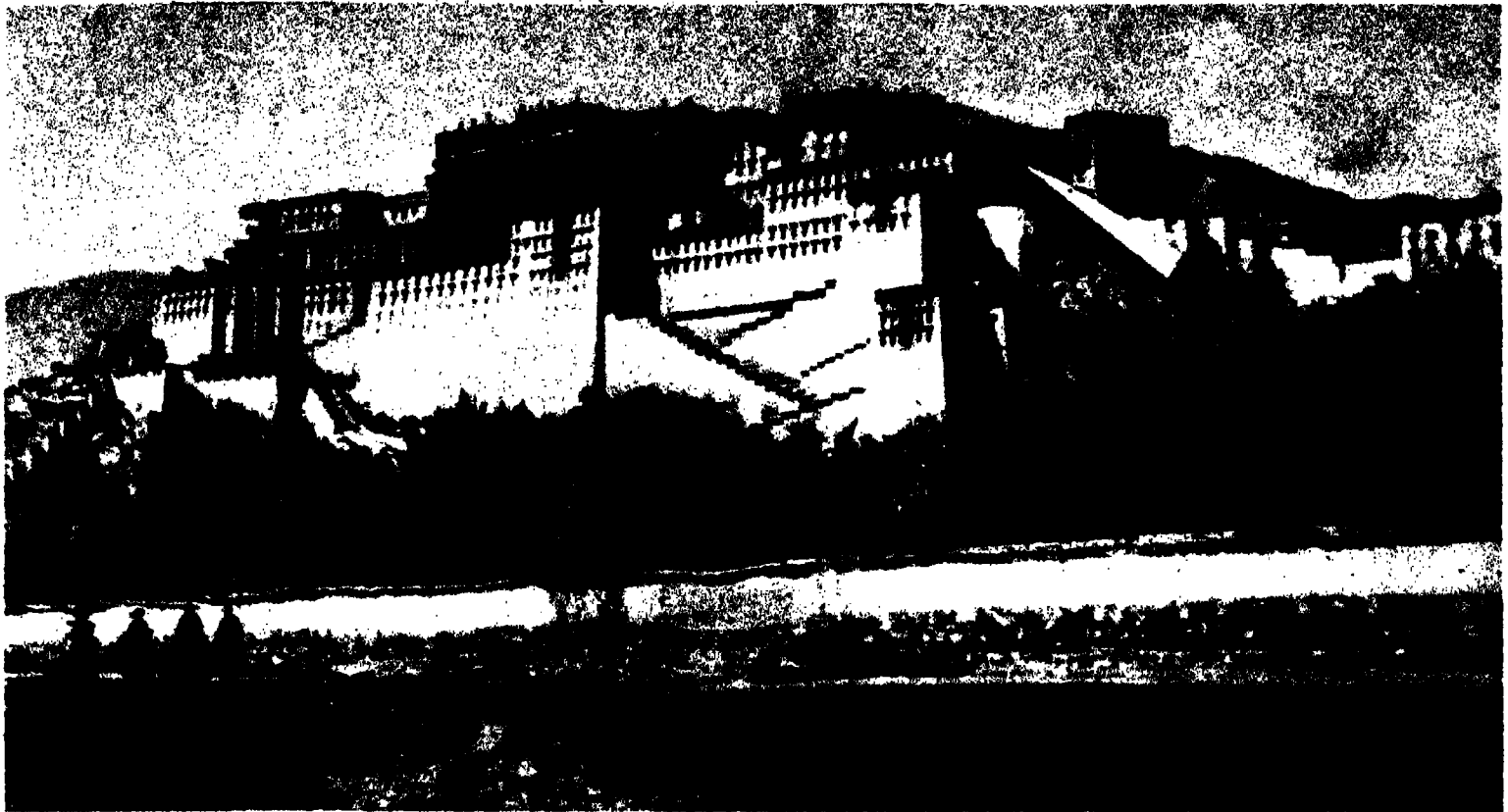


E.N.A.

THE WILDNESS OF THE UNINHABITABLE HEIGHTS

High up in the Andes are bleak, barren stretches of country, where nothing can be grown, and which are completely uninhabitable. In the background is the cloud-wreathed volcano of Misti, the summit of which still awaits man's conquest.

THE ROOF OF THE WORLD



E.N.A.

THE WONDERFUL POTALA IN THE FORBIDDEN CITY

In one of these sheltered valleys of Tibet is Lhasa, the home of 25,000 Buddhist monks, or *lamas*, who live upon the offerings of the faithful. Above is a view of the famous palace of Potala, built 700 years ago. No "foreigner" can enter here.



E.N.A.

MAN'S GREATEST FRIEND IN THE WINDSWEPT HEIGHTS

In the north of Tibet, barren, bleak Nature has provided the yak to be a beast of burden, supplier of food and a provider of clothing material. It is to the Tibetan what the reindeer is to the wandering tribes of the European "tundra" districts.

THE ROOF OF THE WORLD



G.P.A.

THE IMMORTAL "BISHOP" OF TIBET

The Dalai Lama is considered immortal, and when one dies his successor is chosen from a child born at the moment of his death, since the Tibetans believe that the soul passes from the dead to a living child. Here is a remarkable picture of the late Dalai Lama presiding at the annual dance festival of the Buddhist priests. The bowl of rice is an emblem of plenty.

RACES AND PEOPLES

WITHIN the boundaries of the known world are many varieties of human beings.

From time to time attempts have been made to classify them, and one of the first systems of classification was based on the colour of the skin—white, black, brown, yellow, and red. It was not really a very scientific system, but the results are not far removed from those based on other details, especially if we regard browns and red as varieties of yellow.

Later systems of classification have been based upon such characteristics as the shape of the head or the nose, and, perhaps most reliably, upon the shape of a cross-section of the hair.

For the purpose of a broad survey, such as this book should contain, we shall not go far wrong if we try to combine the nature of both skin and hair, and adhere to a more or less old classification which divides mankind into three main groups—Mongolian, Negroid, and Caucasian.

Neither colour nor hair is, however, any certain indication of physical excellence or intellectual superiority, especially where individuals are concerned. Within the limits of the Mongolian race, for instance, are people as primitive as the hunting tribes of the Malay forest and as cultured as the Chinese. At the same time, roughly speaking, it may be said that the Negroid is the least and the Caucasian the most highly civilised of the three main groups of mankind.

The Standards and Methods of Living

There is, however, another way of looking at the peoples of the world, which for our purposes is far more profitable than any discussion of skin or hair, and that is the stage they have reached in their cultural development.

We are all familiar with the fact that our own far distant ancestors lived in the open air, in caves

and in the shelter of overhanging rocks, in a state of more or less nudity, and hunted animals as big as elephants with weapons of stone. We have travelled a long way from those Old Stone Ages, and we are apt to imagine that all traces of them and of many of the intermediate stages by which man mounted the ladder of human progress have disappeared. This is far from true. There are, at this moment, groups of human beings living practically at every successive level from that of the Old Stone Age to that of the most advanced civilisation.

It is true that there are now few people at the very bottom of the ladder, that they are rapidly becoming extinct, and that it is difficult to find any group that has not, to some extent, become a little modified by contact with the explorer, the trader, and the missionary.

To classify man according to the level of his cultural development, we have to consider chiefly the nature of his control over that physical environment that we set forth in Section I. A well-known classification, from this point of view, divides man into three different groups or types: (1) savage, (2) barbarian, (3) civilised.

The Savages who Live by Hunting

The savages are those who live by hunting and fishing and the collection of wild food of various kinds. They do not cultivate the soil, and

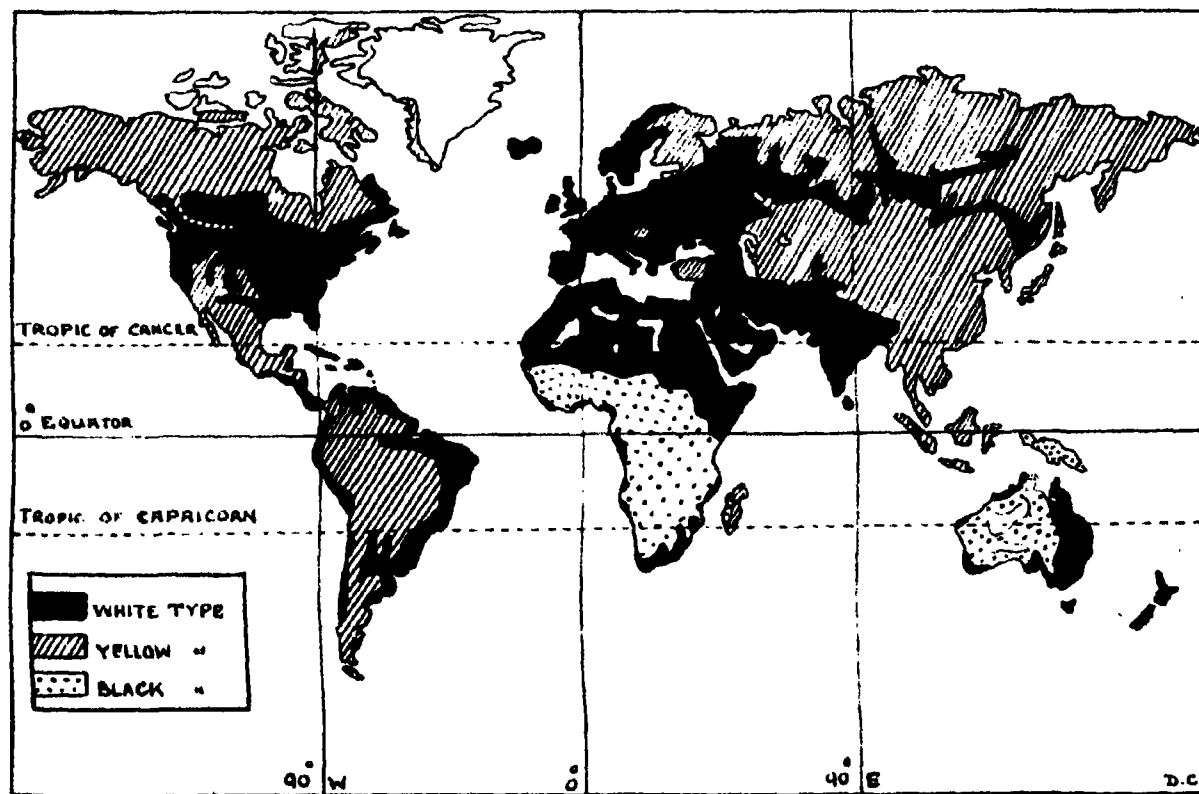


Fig. 13.—DISTRIBUTION OF MAN BY COLOUR OF SKIN

RACES AND PEOPLES

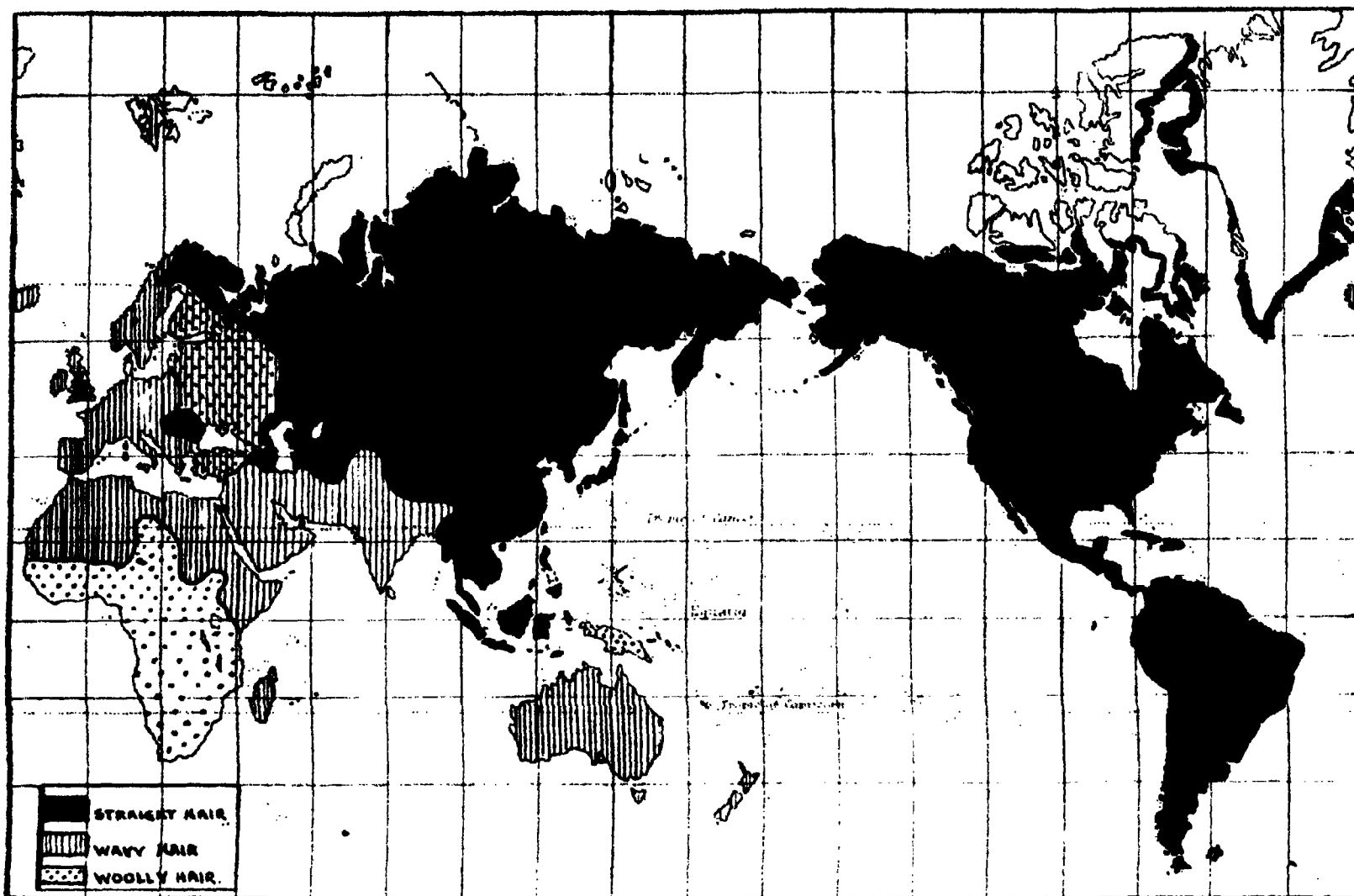


Fig. 14.—DISTRIBUTION OF MAN BY KIND OF HAIR

have no domestic animals. The term "savage," in this connection, has no reference to any fierceness of disposition. Most of the primitive food gatherers are, in fact, quite peaceful if left undisturbed. It is quite wide of the truth to talk about "taming the savage"—he is usually tame enough if left alone to conduct his own methods of living.

The Barbarians who Till the Soil

The barbarians are those who have reached the stage of primitive agriculture. They include peoples at different levels of capacity in the cultivation of the ground, from those who merely scratch the ground with a digging stick to those who have arrived at the use of a simple form of plough. Many of them still combine hunting and fishing with the tilling of the soil and the tending of domestic animals; but the fact that they do till the soil or tend domestic animals, or do both things, gives them the right to be put into this higher group than the hunting savages.

Civilised Peoples who Read and Write

Civilised peoples, in the narrow sense of the term, are those amongst whom there is some

knowledge of reading and writing and of the keeping of written records. They include groups where only a minority, say the priests, are literate, and those where education is widely spread.

We shall divide both savages and barbarians into (a) lower, (b) middle, and (c) upper groups, and try, by means of pictures, to indicate the stage they have reached in their cultural evolution. It is possible to differ about the exact position of a number of the peoples chosen, but our purpose will have been sufficiently served if we have succeeded in indicating how, under existing conditions in many parts of the world, man is slowly climbing up the ladder of social progress.

In the case of the civilised peoples we shall have to be content with a division into (a) lower, and (b) middle. No people can claim, as yet, to have become completely civilised. When the highest levels have been reached there will be no more slums, a liberal education will be widely distributed, preventable disease will have disappeared, and war, the utter negation and destruction of everything that is valuable to humanity, will have passed into the region of almost unbelievable and impossible nightmare. That is the end to which we all must strive.



E.N.A.

THE PRIDE OF A BURMESE VILLAGE

This girl belongs to the great Mongolian race, which peoples south-east of Asia, Burma, China, Siam, and the mountainous land of Tibet. The peasant Mongolians have either yellow, brown, or red skins; and their hair is straight and lank.



Dept. of the Interior, Ottawa

FROM LAPLAND TO "DOWN UNDER"

The Mongolian type is also found in the cherry-blossom land of Japan, snow-locked Lapland, and the grass-covered plains of Central Asia. Even the Maoris have Mongolian blood in them. All Mongolians have prominent cheek bones, broad noses, and slanting eyes.



Courtesy, Swedish Travel Bureau



Courtesy, N.Z. Govt.

(Above)
A MAORI
CHIEF

(Top Left)
AN ESKIMO
WOMAN

(Left)
A FAMILY
OF LAPPS

The Mongolians of Central Asia are herdsmen and spend their lives wandering about with their flocks in search of pasture. They are excellent horsemen, and almost live in the saddle. They have two kinds of houses—a travelling tent, which is a simple ridge pole tent, and a more permanent tent for use when they stay for any period in one place. The latter is known as a yurt, and consists of a lattice framework, covered with heavy felts, with a hole for a chimney. It is easily dismantled



South African Railways

A WEST AFRICAN BUSHMAN

The civilised world lies outside the ken of the bushman who leads his wandering simple life in the solitary tracks of the Kalahari desert. It is only here that this short, yellow-skinned bushman still survives, clad in a few old rags.



E.N.A.

A PAPUAN OF FIJI

In Fiji and the palmy South Sea Islands, the laughter-loving natives, or Papuans, are chocolate coloured with thick woolly hair. This young Fijian is combing his hair with a wooden comb. His clothing consists of a loin cloth.



A FIRESIDE GROUP IN CENTRAL AFRICA

The dark or black skin, the flat nose, thick lips, woolly, or black curly hair stamp the African negro. South of the sun-baked Sahara the negro race is legion. Here is a typical Dinka family squatting round the fire outside their dwelling.



Indian State Railways

A HINDU STONE-CUTTER AT WORK

These people all belong to the Caucasian race, which spreads over the stretch of land from Scandinavia to India. The moustaches of the Ainu women in the picture below are tattoo marks. The colour of their skin varies from white to dark brown. Their hair is wavy, their faces oval, and their eyes are set in a straight line. Their men grow huge *real* moustaches!



SWEDISH PEASANT GIRLS

E.N.A.



WOMEN WHO TATTOO THEIR FACES

E.N.A.



E.N.A.

THE WHITE NATIVE RACE OF NORTHERN AFRICA

All African natives are not dark. The million Berbers, including the Kabyles and the Riffs, are a white race. They are Mohammedans, but do not follow all their observancies, for, as in modern Turkey, their women go about unveiled.



E.N.A.

THE HUNTING CAVEMEN OF CEYLON

In Ceylon, the Veddas, the lower savages, are forest dwellers living in rock shelters, though they occasionally build huts of leaves. Their only weapons are the bow and arrow, and their food, fish, game, honey, and yams, which are grown like potatoes, and which they obtain with a digging stick. The pulling of these bow-strings demands considerable strength.

(Right)

THE NATURAL DWARFS OF THE PHILIPPINE ISLANDS

The Pigmy has always been a curiosity of the world. Contrary to repute, he is almost always at peace. The Pigmy lives by hunting and fishing and collecting wild food. He wears little or no clothing and has no proper house.

(Below)

SHOOTING FISH WITH BOW AND ARROW

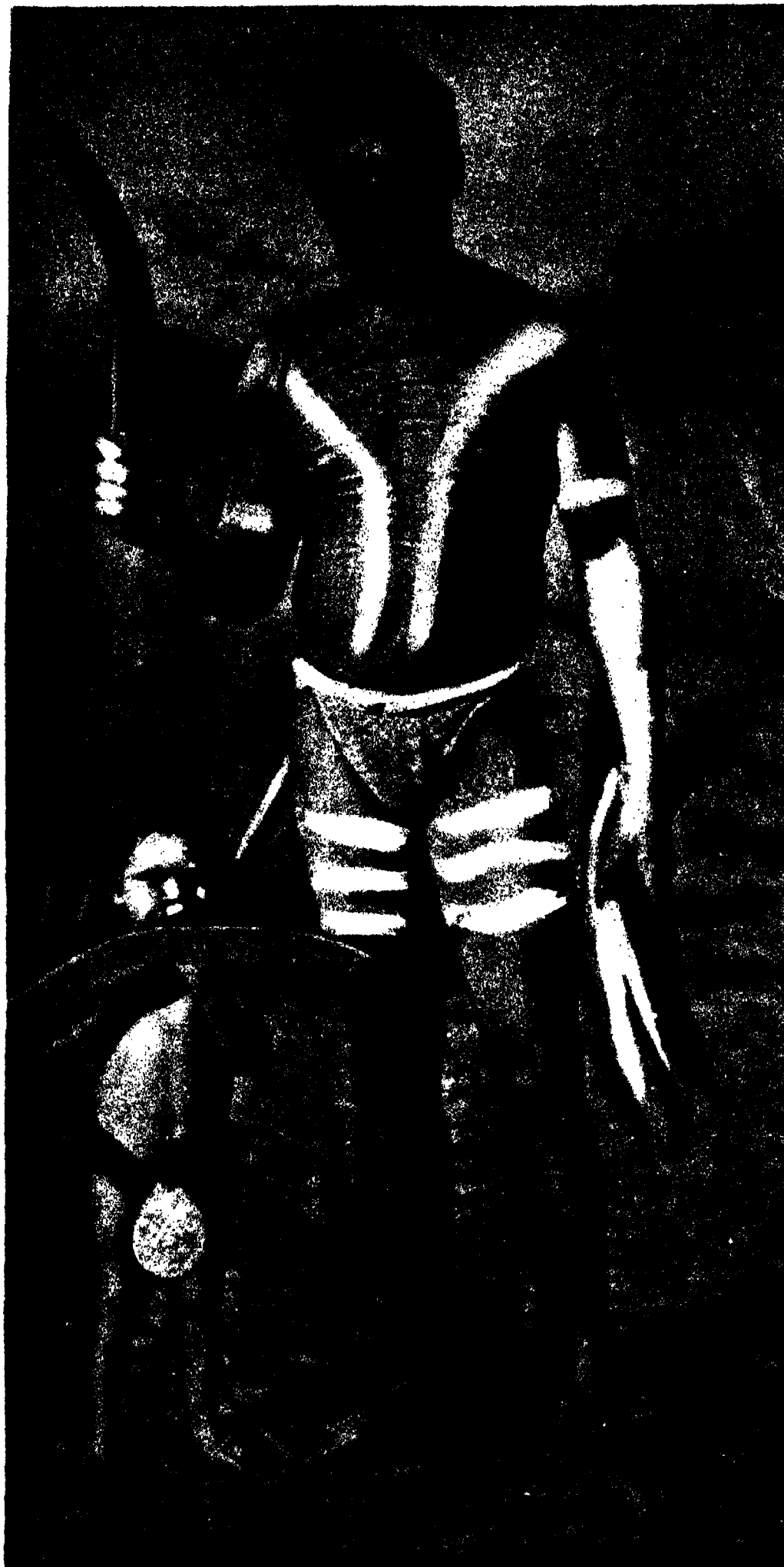
The natives of the Andaman Islands live on fish, turtle, wild pig, and honey. They do not keep domestic animals, and they are unable to make fires for themselves. The men wear no clothing; the women a small "tailed" apron made of leaves tied round their waists.



E.N.A.



E.N.A.



Courtesy, Commonwealth of Australia

THE WIELDER OF THE BOOMERANG

The inventors of the boomerang that returns to the hand of the thrower were the Australian aborigines. They are still a primitive hunting race wearing little clothing, but living in groups and armed with handy weapons such as this.



Courtesy, Commonwealth of Australia

MAKING A BOAT OUT OF A SINGLE TREE

Here is another Australian aborigine in a dug-out canoe. He is not afraid of the water, and makes his boats out of logs and single sheets of bark. All the tribes of Australians use spears and wooden clubs, but not bows and arrows, such as the Veddas of Ceylon.



E.N.A.

THE HUNSMEN OF THE PAMPAS

The Indians of Patagonia ride over the vast pampas plains with their lassoes and bolas. Like Eskimos, they live by hunting.

CORSETS OF CANE AND SILVER DOLLARS

Below are two Dyak children all dressed up for a ceremony. This girl is wearing a rattan or corset of canes ornamented with silver dollars. The rest of their jewellery is of heavy native silver. Note their elaborately feathered headdresses.



E.N.A.

THE LAST RELICS OF THE PICTURESQUE RED MEN

(Right)

The American Red Indian tribes—that once enlivened the pages of Fenimore Cooper and Buffalo Bill—are fast disappearing. Here is the chief of the Wood Crees, one of the Algonquin tribes. They and the Iroquois obtain their food by hunting and fishing, though they also cultivate maize and beans. They use skins tanned soft as suede for their clothing.



Government and Committee of the Hudson Bay Co.

(Right)

ASIAN MAGIC—THE WITCH DOCTOR OF SIBERIA

The Shaman is to the Yahuts what the witch doctor is to the Africans. By incantations and magic rites he compels the good spirits to be friendly and repels the evil ones. The Yahuts live by fishing and trading and use the reindeer. They are a mixed Turkish race living in the basin of the Lena, Eastern Siberia.

(Below)

BEAUTIFUL POTTERY IN SOUTHERN NIGERIA

A native of Southern Nigeria engraving pottery. Note the elaborate work and the simple tools he is using. In this part of the world, which is densely populated, the natives have reached a higher stage of comfort and culture than their racial neighbours.



E.N.A.



E.N.A.



Canadian Pacific Railway

THE VEGETARIAN SMITHS OF KENYA

Round Mount Kenya dwell tribes who have houses like these, or circular tents. They practise pottery and weaving, work metal and cultivate the soil with more or less domestic animals. They are good smiths and make metal rings for ornaments.



E.N.A.

CHEERFUL IN THE MIDST OF SIBERIA'S SOLITUDE

From the Yenesei river to the shores of the Pacific Ocean live the wandering Tungus hunters. While the men are hunting and attending to the flocks, the women remain in their dreary homes yet never seem to lose their cheerfulness.



E.N.A.

IN THE LAND OF THE SHEIKS

Romance may depict the Arabs galloping across the desert brandishing spears and rifles. In reality, the Arabs make their living by trading in butter and salt, by selling horses or by acting as guides. They also herd camels, sheep, and goats.



THE ORIGINAL FUZZY-WUZZIES—CARD PLAYERS!

This name was given to the warriors of Somalil and in the Mahdist war, because of their habit of frizzing out their hair. They are a pastoral people, keeping camels, goats and sheep, and are expert basket makers. They also play cards.



(Left)

**WHERE THE
UMBRELLA IS AN
EMBLEM OF STATE**

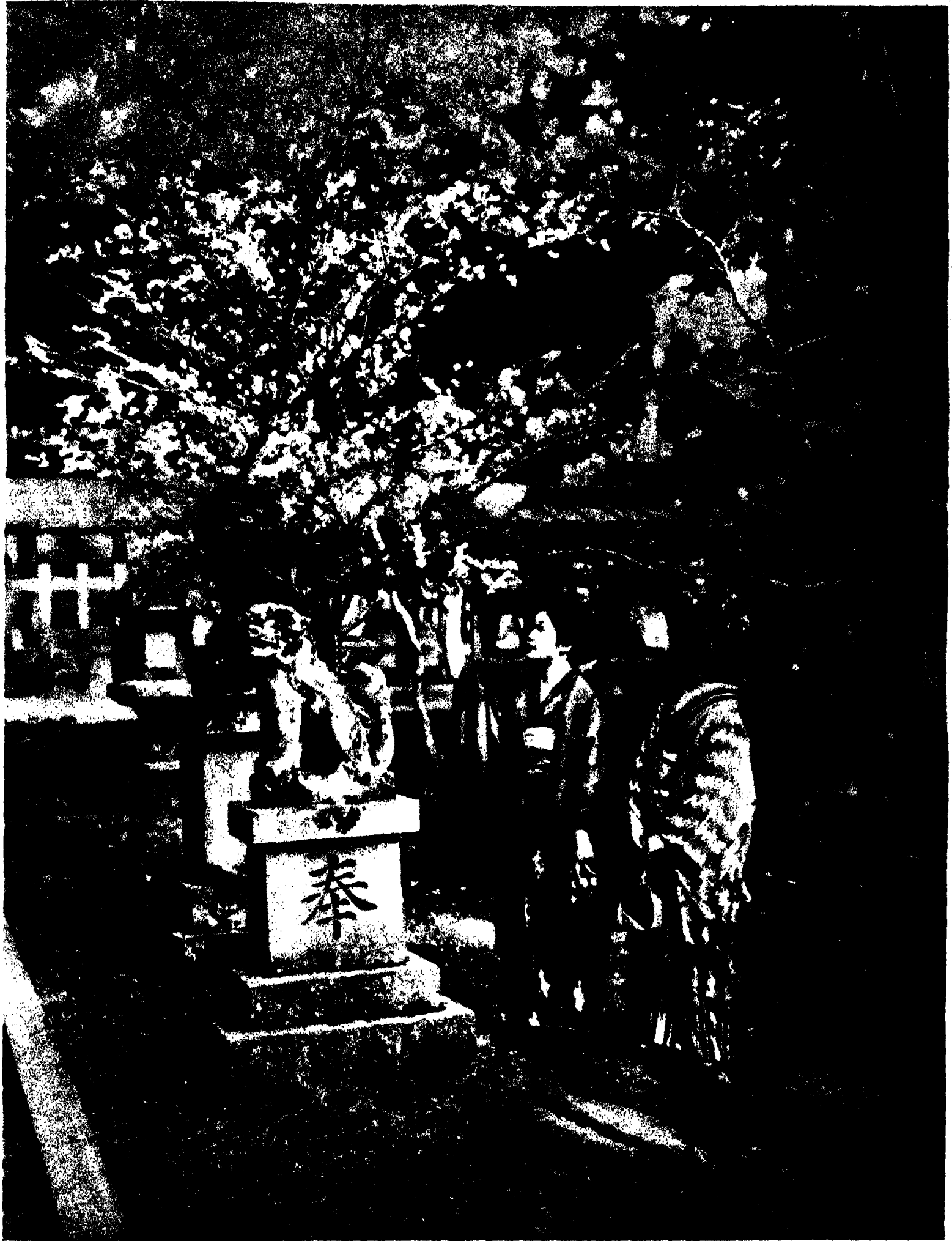
In Togoland, West Africa, the Hausa natives can read and write and have produced a native literature. They are farmers and miners, spin, weave and dye and work in leather and glass. They are lovers of ceremony and ornaments, as could be guessed from this picture. The state canopy is borne above the chief to shelter him when he walks abroad.



(Right)

**WHERE ALL WOMEN WEAR
TROUSERS**

In Annam, Indo China, both sexes wear wide trousers and a long black tunic with narrow sleeves. The native woman on the right is standing on the steps of a temple gateway, the elaborate carving on which indicates the advance of public architecture amongst lower barbarians. An interesting fact is that all the women smoke cigars, like the Burmese women. The babies do not wear clothes.



Courtesy, Canadian Pacific Railway

THE LAND OF THE KIMONO AND CHERRY BLOSSOM

Two "little maids from school" take a walk in the Nara Deer Park, in Japan. The great love of the Japanese for the fine arts is characteristic of the other middle-civilised peoples, such as the Chinese, and nearly all the European peoples.



E.N.A.

ADVERTISING THEMSELVES FOR MARRIAGE

The remarkable decorations on the faces of these Aonik Indians of Tierra Del Fuego denote that they are marriageable. Such savage peoples as these are fast dying out, owing either to the poverty of their surroundings, or the introduction of the white man's diseases. Here, again, we see the bow and arrow, a sure sign of a primitive state.



E.N.A.

AMERICA'S COLOUR PROBLEM

In the United States of America there is still intense racial feeling which now and then finds its expression in outbursts of lynch law. Usually most of the negroes are still employed in the lower ranks of labour like those in the picture who are cutting sugar-cane in Jamaica. Many, however, have become well educated and are striving for social equality with the white man.



E.N.A.

A CITY TRANSPORTED OVER THE OCEAN

Here is the heart of Chinatown in San Francisco. Some of these streets are inhabited entirely by Chinese who have brought to America with them their bazaars, banks, restaurants and even their furniture. This is causing an acute yellow problem to the Western Americans, who feel that the invasion of lower-paid Chinese will reduce the white man's standard of living.



WHITE LABOUR IN AUSTRALIA

Australia excludes coloured people, and in the more tropical parts of Queensland, seeks to grow sugar and other tropical and sub-tropical products by means of white labour. Crowded countries, such as Japan, look with envy at the great open spaces of Australia, supporting a population less than that of London or New York with room to spare.

AFRICA'S DOUBLE COLOUR PROBLEM

South and East Africa have a double colour problem in the black negro and the brown Hindu. In the sugar fields of Natal black labour is now being encouraged, in the place of Indian. One of the most troublesome of African problems to be solved in the future is the relationship of a small white population to an overwhelming black one. Also, in South Africa particularly, there is the problem of finding a solution to the enmity which still persists in parts between the Dutch and the English.



HOW MAN FEEDS HIMSELF

ALL men, be they savage or civilised, have certain common needs, e.g., air to breathe, water to drink and food to eat, and, in most cases, shelter and clothes as well.

Savage man is dependent on what Nature provides. His part is merely that of the hunter and collector, and he is forced to eat almost anything that he can find which is in any way edible. Even grubs, scorpions and snakes are eaten by some people! He frequently goes hungry, even in the tropics, where vegetation is luxurious, and you would imagine it would be easy to find sufficient food. Often he is as much the hunted as the hunter.

As man rises in the scale of civilisation he gains more and more control over his food supplies; he tills the ground and domesticates animals. But hunting and fishing go on through all levels of society, even among the civilised, although, in the latter case game and fish do little more than supplement the supplies of meat, grain, fruit and vegetables that are raised upon ranch and farm. In some parts of the world man is predominantly pastoral, living on the produce of his flocks and herds; in others he is predominantly agricultural, living on his crops; but in most cases he practises both herding and farming and has a more varied diet.

The staple food of a people, whether animal or vegetable, or mixed, is largely a matter of climate. The Eskimo eats seals and other marine creatures, because his own surroundings are too cold to permit of agriculture. The Australian aborigine in some districts still lives, or partly lives, as he did before the advent of the white man on his continent, on kangaroos, lizards, rats, ants, grubs, roots and berries, because his homeland possesses no animals suitable for domestication and no plant suitable for cultivation. The cattle and sheep, the grain which Australia exports to the rest of the world to-day, were all imported into the country by the white man.

The variation of diet with climate is well seen in India, a country sufficiently large to experience a wide variety of climates. In the hot, wet, steamy plains of the Ganges the staple food is rice, which requires both great heat and moisture. In the laval-covered plains of the Deccan, the so-

called "black soil" region, *millet* is the staple food. This grain needs a much drier climate than rice and disappears where the rainfall exceeds 40 inches per annum. In the Punjab, *wheat* takes the place of rice or millet. It is sown when the monsoon rains start, and is ripe for harvest at the end of the year before the onset of the cold night temperatures. Wheat needs both less heat and less rain than the rice which is so common on the eastern side of the country.

Food, however, though largely a matter of climate, is also to a great extent a matter of habit and acquired taste. In these days, when transport is available for the carrying of anything to anywhere, it would seem as though all the world, so far as financial resources permit, would want to eat the "nicest things." But it is impossible for us to lay down a hard and fast rule as to what *are* the nicest things! Some Chinese might vote for puppy dogs, rats and birds' nests; some Oriental folk would show a decided preference for locusts and other insects; and more than one European would plump for cheese in a condition that some people might call one of advanced decay! There is no accounting for tastes, and we should beware of regarding everything strange as repulsive and abnormal.

Civilisation began with the taming of animals and the cultivation of the soil. Which form first occurred is not known. It is probable that some animals were domesticated before the soil was cultivated, but practically all the things that distinguish what we think of as civilisation arose with the cultivation of the ground.

It is a far cry from the first primitive agricultural implements which were contrived to the machines which are used in western lands to-day. Yet some of these ancient implements are still in use in some parts of the world. One of the earliest and simplest agricultural tools was the digging-stick. This is nothing but a pointed stake, which is sometimes hardened by fire at the end. These digging-sticks are still used by the aborigines of Australia for procuring roots out of the ground. In Fiji a variation of this forerunner of agriculture is used for clearing away brushwood and coarse grass. It is a lancet-shaped piece of wood about a yard long. Among the bushmen of South

HOW MAN FEEDS HIMSELF

Africa an implement, known as a kibi, which is a rather more elaborate form of digging-stick, is used for unearthing the eggs of the termite or white ant, a favourite delicacy with these people. The kibi is weighted by a heavy perforated stone, attached at the centre and secured by a wooden wedge. After the digging stick came the spade, and then the hoe. This latter is still the chief implement among many primitive people, and we use it ourselves in the garden.

Most of the work of cultivation falls to the women in primitive countries. The man is the hunter; the woman's job has always been to gather berries and roots—which makes it seem highly probable that it was woman who originally discovered, possibly through accidentally throwing out some seeds of over-ripe berries, that it was possible to cultivate such food!

Since the greater part of the food we eat to-day depends on the farmers, we shall, therefore, devote considerable space in this section to farming operations all over the world. In the main, most of the cereals are cultivated after the same fashion—ploughing, harrowing, sowing,

harvesting, threshing, winnowing. If the product is to be sold, there arises the problem of storage and transport. It is only recently, and within our own time that these problems have been solved. Now we can have, not only our wheat, but our meat, our fish, dairy produce such as butter, cheese, even eggs, brought from the other side of the world—and still fresh, in as perfect condition as when they started out. Cold storage has brought this about. The discovery, too, of how to can goods has made it possible to preserve food for an almost indefinite time. Everything can be bought in cans nowadays—meat, fish, fruit, vegetables—either to be eaten as fresh vegetables or in the form of soups—even milk. Transport becomes speedier every year. Motor lorries, trains, great ships, are all organised to rush the food supplies of the world on journeys that sometimes cover thousands of miles.

We shall illustrate this course of events from grain, and then take a brief look at the way in which the chief foods which man relies upon to-day are produced and manufactured in a diversity of ways in the various countries of the world.

OLIVE BARRETT.



WATER — MAN'S UNIVERSAL AND PRIMARY NEED



G.P.A.

MAN THE HUNTER MAKES HIS KILL

In many parts of the world, as we have seen, man in a primitive state still lives on the animals he kills. Here a lithe young savage eagerly watches his father shooting fish with a long spear-arrow. But now we turn from Man the Hunter to Man the Tiller of the Soil and the ploughing of the earth and the raising of crops—the whole story of man's evolution is shown.



Courtesy, Indian Railways

AS WE PLOUGHED BEFORE THE NORMAN CONQUEST

The scratching of the soil with two pointed sticks is one of the most primitive methods of ploughing, and has been continued in many parts of the world for over a thousand years. Here we see buffaloes drawing this crude wooden plough in India.



G.P.A.

CORN OUT OF EGYPT—IN THE TIME-OLD WAY

Again, on the site of ancient Memphis in Egypt, we find a farmer breaking up the ground with his ox-drawn plough, while a camel caravan brings rich mud from the Nile to make the soil fertile for grain and cotton. Fertility displaces barrenness.

PLOUGHING

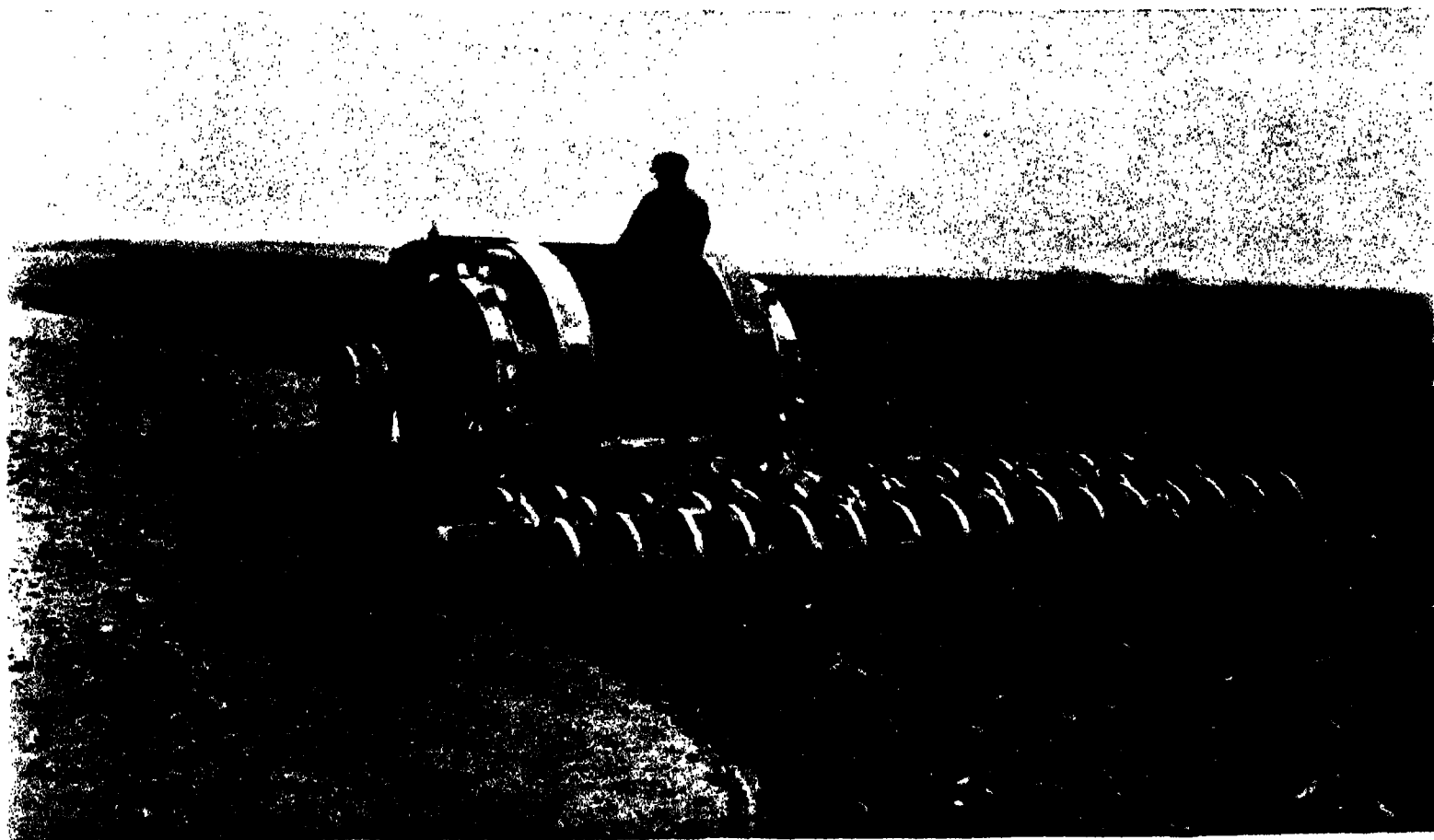
HOW MAN FEEDS HIMSELF



Courtesy, Australian National Travel Association

A CONTRAST TO-DAY--PLOUGHING ON THE GREAT OPEN SPACES

Nowadays, of course, machinery is employed in more advanced countries. In this picture of an Australian wheat field horses are seen pulling a disc plough. The vastness of the field can be imagined from the fact that the long ploughing team will be out of sight before the return journey is commenced. But the motor tractors are fast displacing horse-trains.



Courtesy, C.P.R.

HARROWING THE LIMITLESS CANADIAN PRAIRIE

The Canadian wheat field of the prairie is mainly flat and treeless and so is specially suitable for the extensive use of machinery. After the soil has been ploughed, it is harrowed by means of this machine with numerous metal teeth that break the soil into fine pieces. Soon this vast area will be covered with a rich crop of wheat swaying in the breeze.



SOWING BY HAND THROUGH A PRIMITIVE DRILL

In many countries the seed is sown broadcast or by hand or, as in this example from India, by means of a primitive drill through which the seed is dropped from the hand as it is dragged across the field.

Courtesy, Indian Railways



Courtesy, C.P.R.

THE GIANT COMBS OF THE MODERN TRACTORS

By way of comparison, look at this Canadian farmer's machine which drills the ground, drops in the seed and covers it up, and is drawn by a tractor. There are even wonderful labour-saving machines that plough, harrow and sow at the same time.



Courtesy, Inlowrist

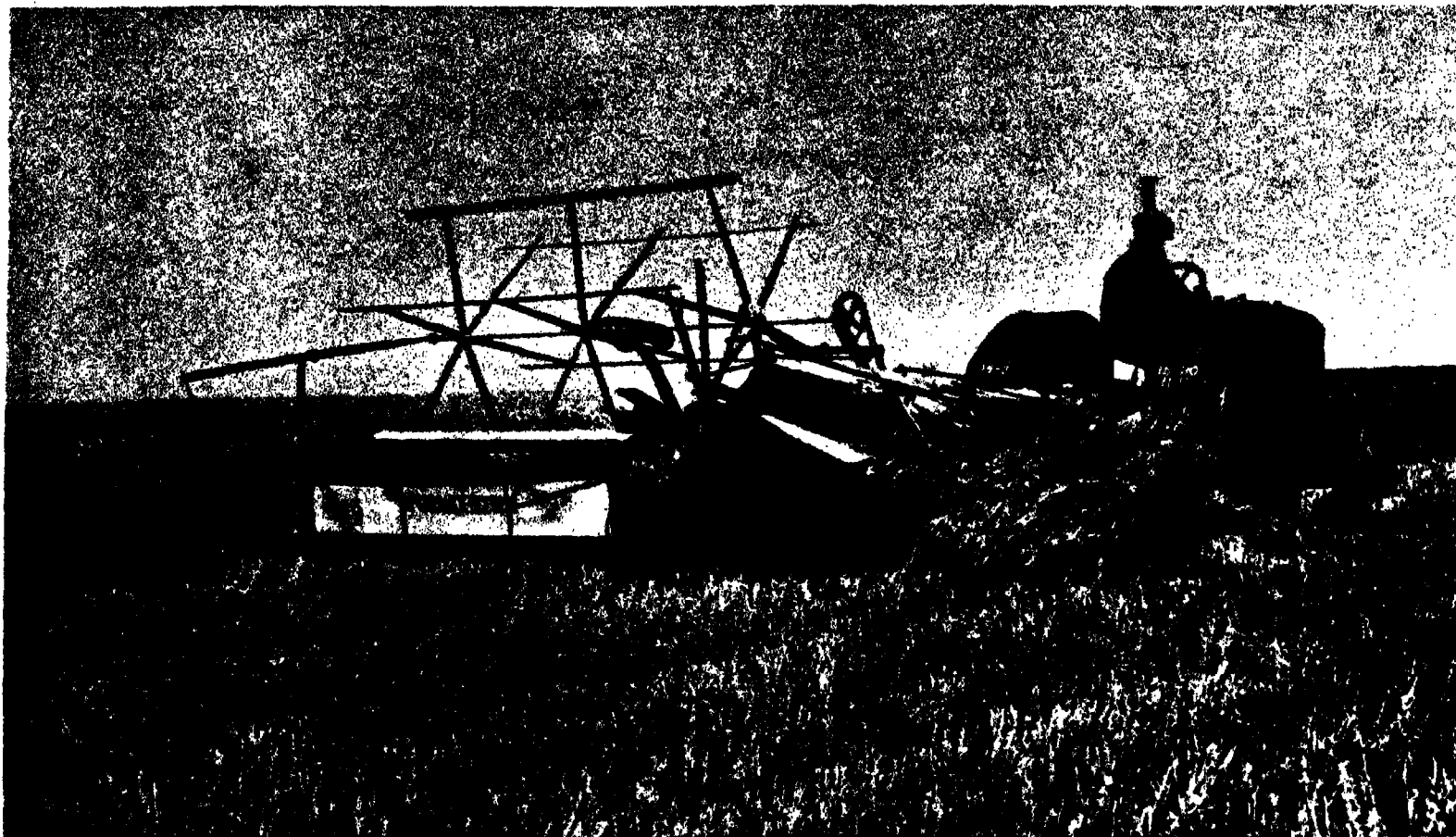
THE SOWERS—1934 : A HARVEST FROM THE CLOUDS

The latest innovation comes from Russia where the grain is sown by aeroplanes over enormous areas of fertile lands.



THE REAPERS—A SCENE THAT MILLET MIGHT HAVE PAINTED

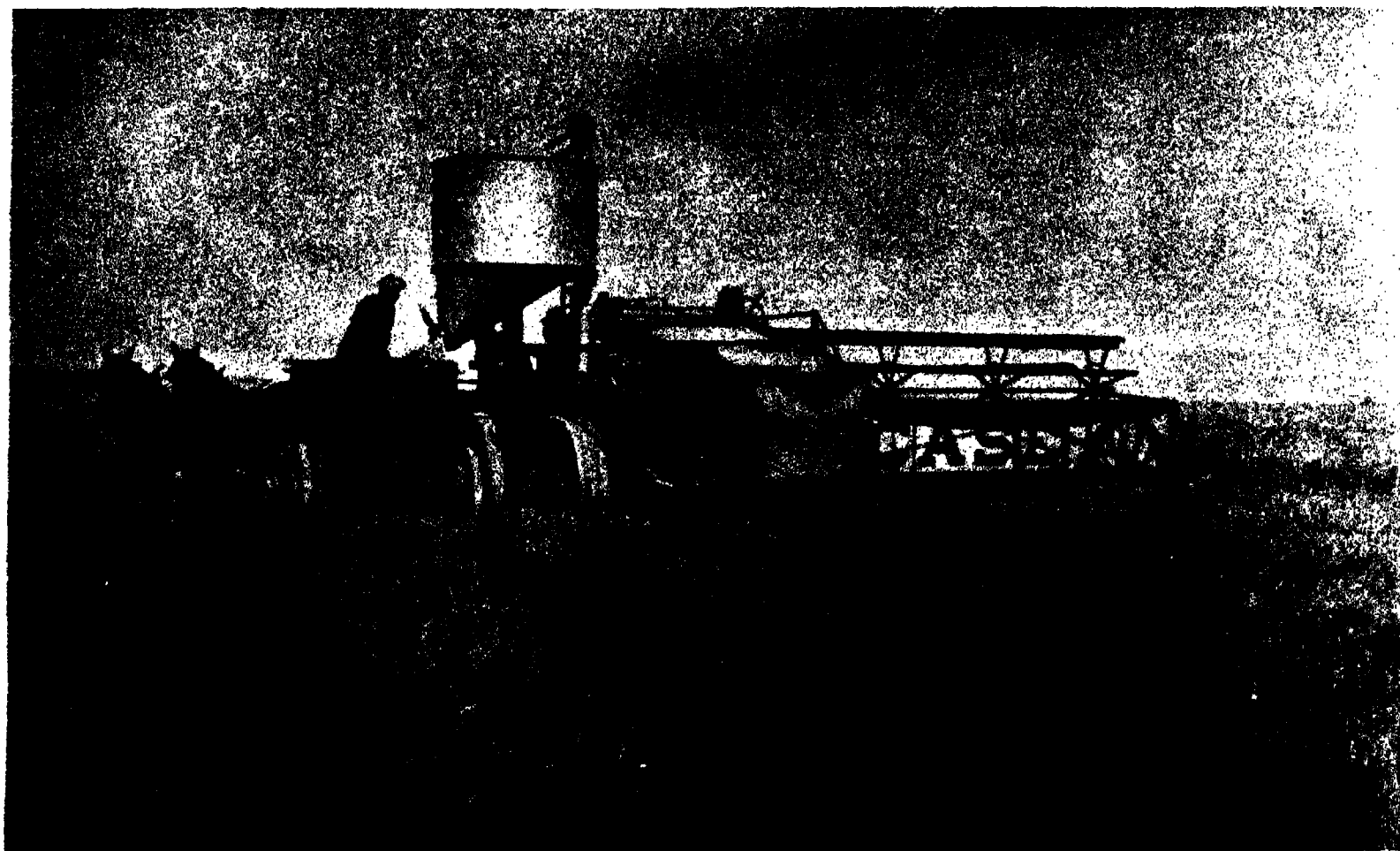
Here is a picturesque harvest scene on the plains of Raphia in Palestine. Just as we have found primitive methods are still used in ploughing, so in the reaping of the harvest machinery has not entirely supplanted hand-labour by the familiar sickle.



Courtesy, C.P.R.

THE HALF-HUMAN MACHINE THAT CAN TIE A KNOT

Probably the most remarkable of all the wonderfully efficient and labour-saving harvest machinery of to-day is the one that both reaps and binds. A long knife projecting from the left side of the machine cuts the grain, which is then collected on a low platform behind the knife, swept together by a moving arm, tied into a sheaf, and thrown out on the other side.



Courtesy, C.P.R.

A MACHINE THAT THRESHES THE GRAIN AND LEAVES THE STRAW BEHIND

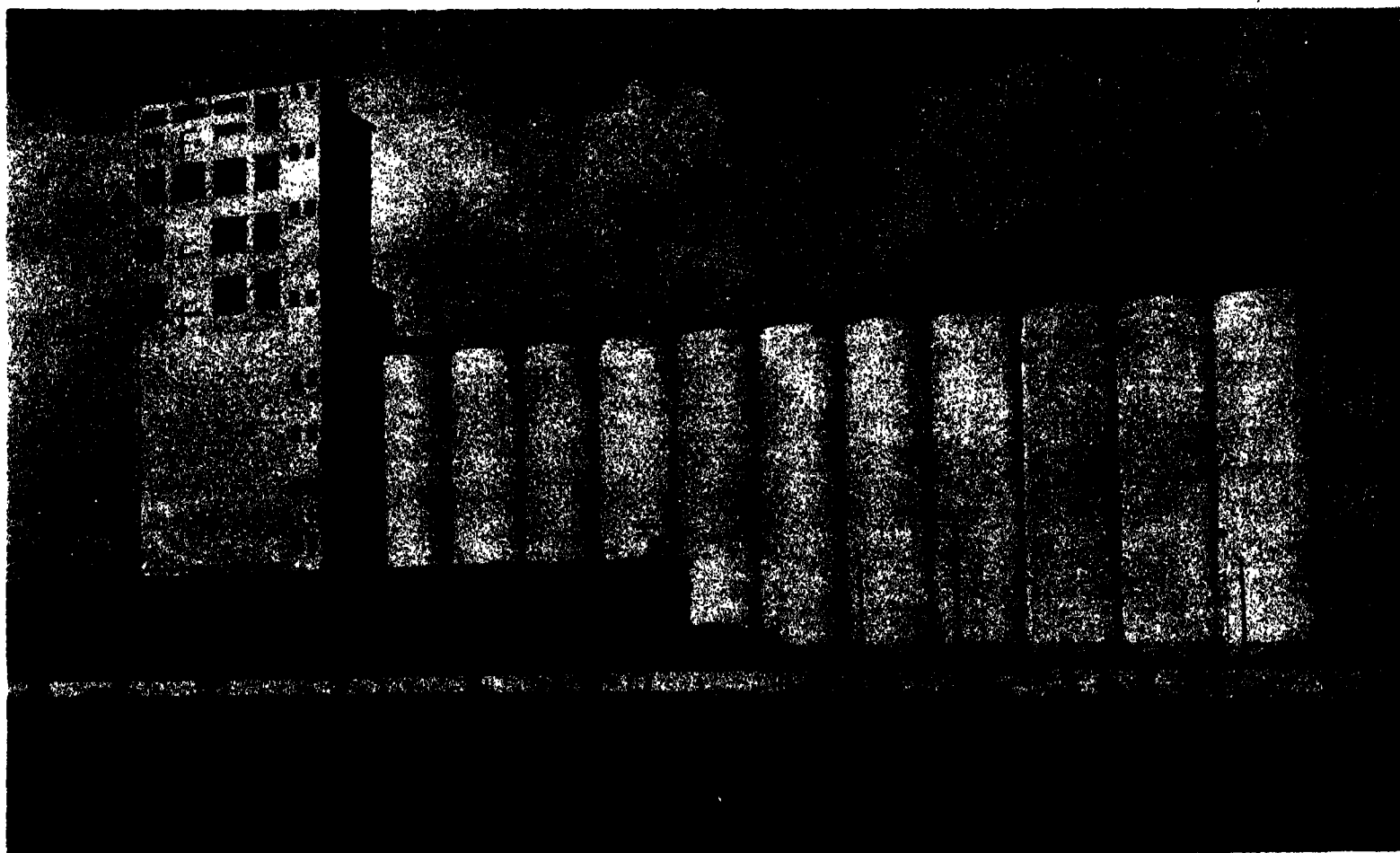
On some of the most up-to-date farms, machines called "combines," thresh the grain as well as reap it. There are no sheaves. The heads of ripe grain are cut off the stalks and the fully ripe kernels separated in another part of the machine.



Courtesy, Australian National Travel Association

CARAVANS OF STRAINING HORSES BEARING GOLDEN GRAIN

The horse is still in favour on the land. In Australia the grain is usually bagged and borne across the country to train or steamer in huge wagons drawn by many horses. Effective transport is one of the biggest problems in the world's open spaces.



Courtesy, Canadian Pacific Railway

THE STARK OUTLINE OF AN ELEVATOR

In Canada grain is carried from the field to a roadside elevator to be weighed, cleaned, graded and stored. It is then carried by a freight train that may be half a mile long to a storage elevator, such as this one which has been built at Victoria.



" A FULL RIGGED SHIP, UNUTTERABLY FAIR "

G.P.A.

This beautiful ship is one of those which take part every year in the famous and romantic " grain race " of 15,000 miles from Australia round the Horn to Europe. Sometimes as many as twenty or thirty sailing ships compete. Calms on " the line," ninety-mile-an-hour gales, icebergs and hurricanes that pile the water shoulder deep on deck are the possibilities that the grain ships learn to expect. The best time made is between eighty and ninety days, if the ships do not meet foul weather.



G.P.A.

IN THE SHROUDS OF A GRAIN SHIP

Although the voyage of the grain racers keeps to no time-table it is a very economical way of bringing grain from Australia. The ships naturally consume no fuel, and the wages are small. This photograph shows some of the crew of the famous Finnish barque, *Parma*, attending to the sails. Another great name in the world of mighty sailing ships is the *Herzogin Cecilie*—a 3,111-ton barque built on the Clyde thirty-one years ago, which has already won this famous race seven times.



PLOUGHING KNEE-DEEP IN WATER

Courtesy, Indian Railways

Rice is grown under water. The ground is first turned into mud by means of a plough drawn by water buffaloes that are driven by men armed with goads. Rice is the chief staple food for many millions of people in India, China, and Japan.



SOWING IN SOFT THICK MUD

Courtesy, Indian Railways

The rice plants are hand-sown by women working constantly in the water, who are served with stacks of plants by a coolie.

RICE

HOW MAN FEEDS HIMSELF



Courtesy, Indian Railways

TREADING RICE

The patient buffaloes help again with a wooden harrow to churn up the muddy "paddy" fields. An abundance of water is essential if the rice crop is to be successful, for if there is a drought the ground becomes sun-baked and useless for rice.



MAKING THE BARREN DESERT FERTILE

Since ancient times man has realised the value of irrigation. Two thousand years ago canals were cut across the parched plains of Egypt and Mesopotamia. Here is a young woman treading a small irrigation wheel in a paddy field in Siam.



THE "GREAT WHEEL" ON THE EDGE OF THE SYRIAN DESERT

G.P.A.

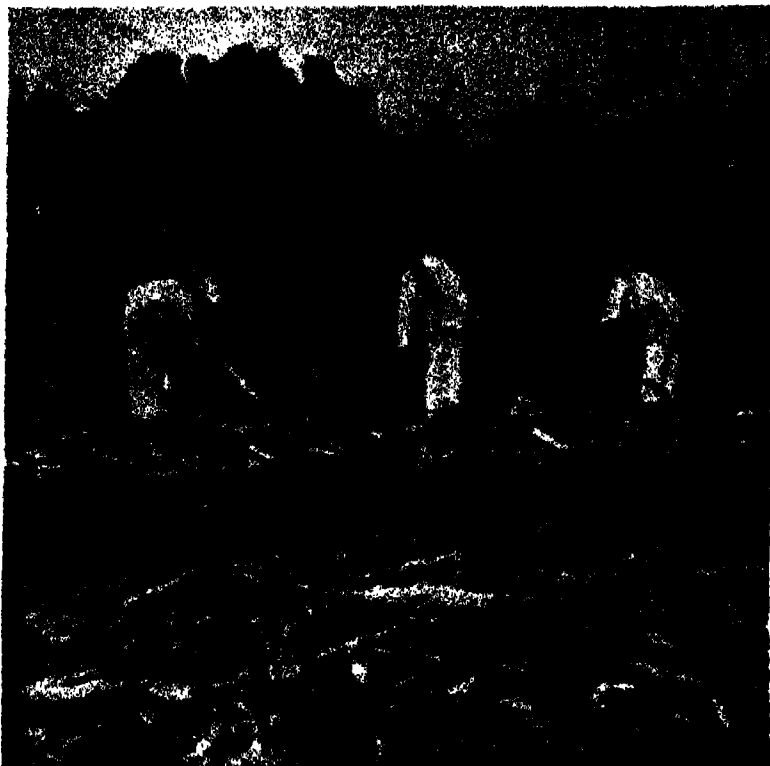
How closely this large bamboo water wheel at Hama resembles the "wheels" of our amusement parks. It is used for irrigation in the dry districts of Western Syria. This welcome pool supplies drinking water and a convenient "laundry."



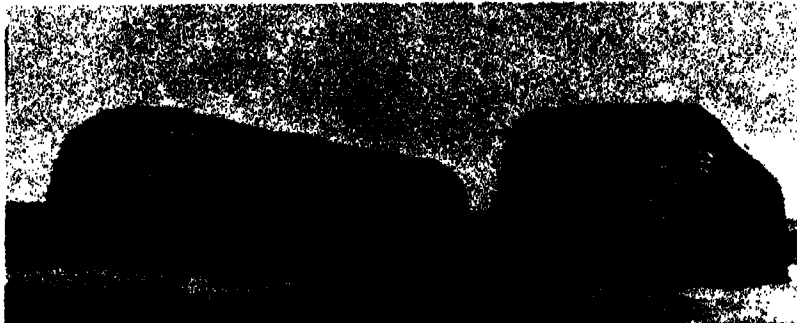
Courtesy, Dorian Leigh, Ltd.

THE HIGHEST DAM IN THE WORLD

Nowadays huge reservoirs and dams are built to regulate the flood waters as at San Fernando, California, which is the highest of its kind in the world. It is 385 feet high and 100 feet thick at the base. The stored water is regulated according to need.



Courtesy, Indian Railways



Courtesy, Government of South Rhodesia

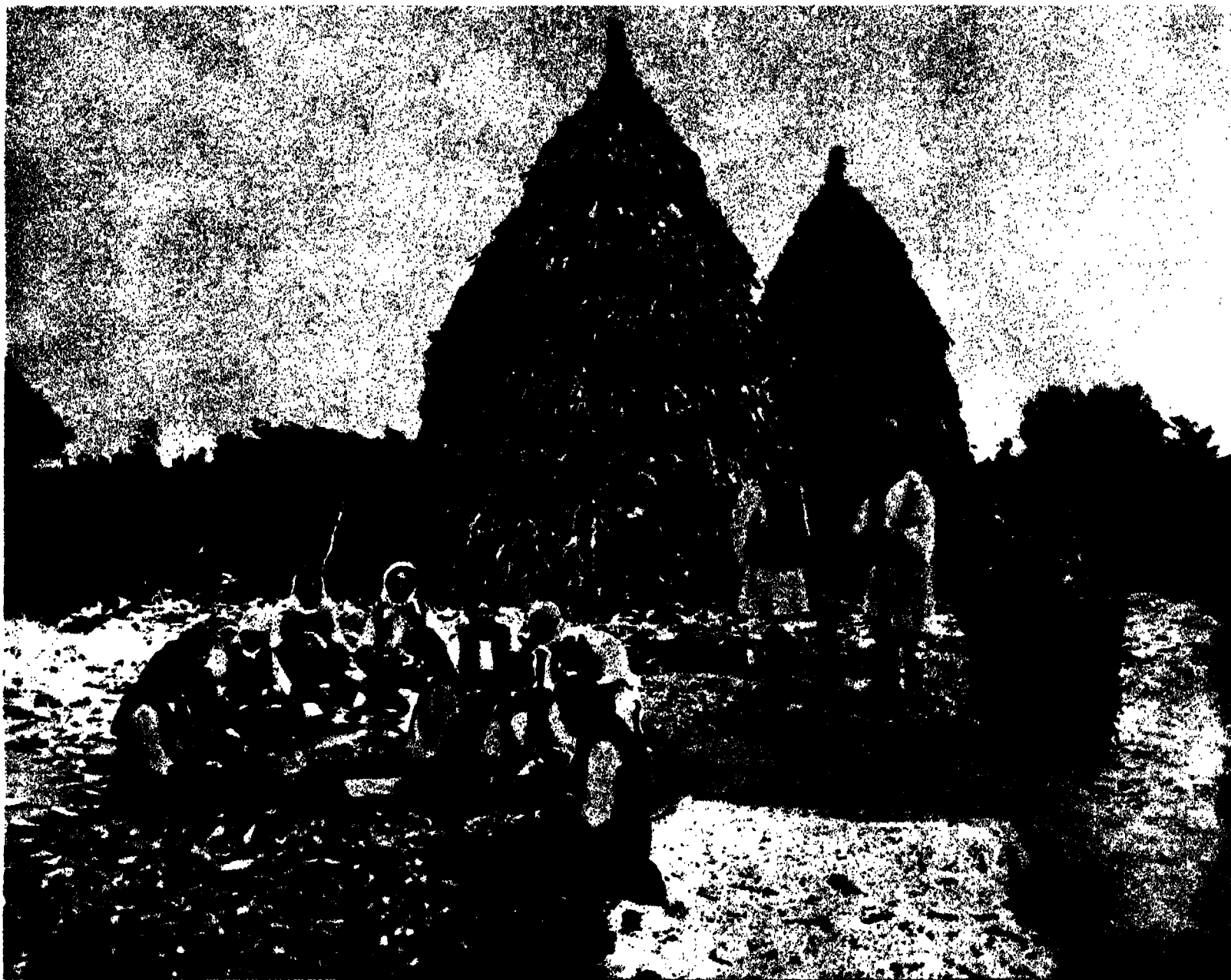
MOUNTAINS OF SOLID FOOD

Maize is also the staple food of the negroes of South Africa. After harvesting, it is placed in bags piled high at the depots. Each bag holds two hundred pounds.

(Left)

TALL AND LEAFY CROPS OF MAIZE

Maize or Indian corn, which revels in sunshine, but needs a fair amount of rain, is grown in India, where it is harvested by hand. At this time it is much taller than the men who reap it. The greatest amount of maize, however, is grown on the plantations in the United States of America.



G.P.A

THE WHOLE FAMILY LENDS A HAND AT HARVEST TIME

In Yugoslavia, when the maize is ripe the whole village down to the youngest inhabitant helps to strip the cobs of their pearly seeds and lay them in the sun to dry. Next to water, the rays of the sun are the most valuable aid to farmers everywhere.

MUSTERING A HUGE AUSTRALIAN HERD

Through the cinema, we are familiar with such a scene as this, which shows the mustering of a herd of beef cattle in Australia and which is typical of the great cattle-raising plains of the world. The greater part of our meat supplies come from the Argentine, Australia and New Zealand. Millions of pounds of beef are canned every year in the huge factories of Chicago, the main centre of this large industry.



Courtesy, Australian National Travel Assn.



Courtesy, N.Z. Govt.

COUNTING SHEEP

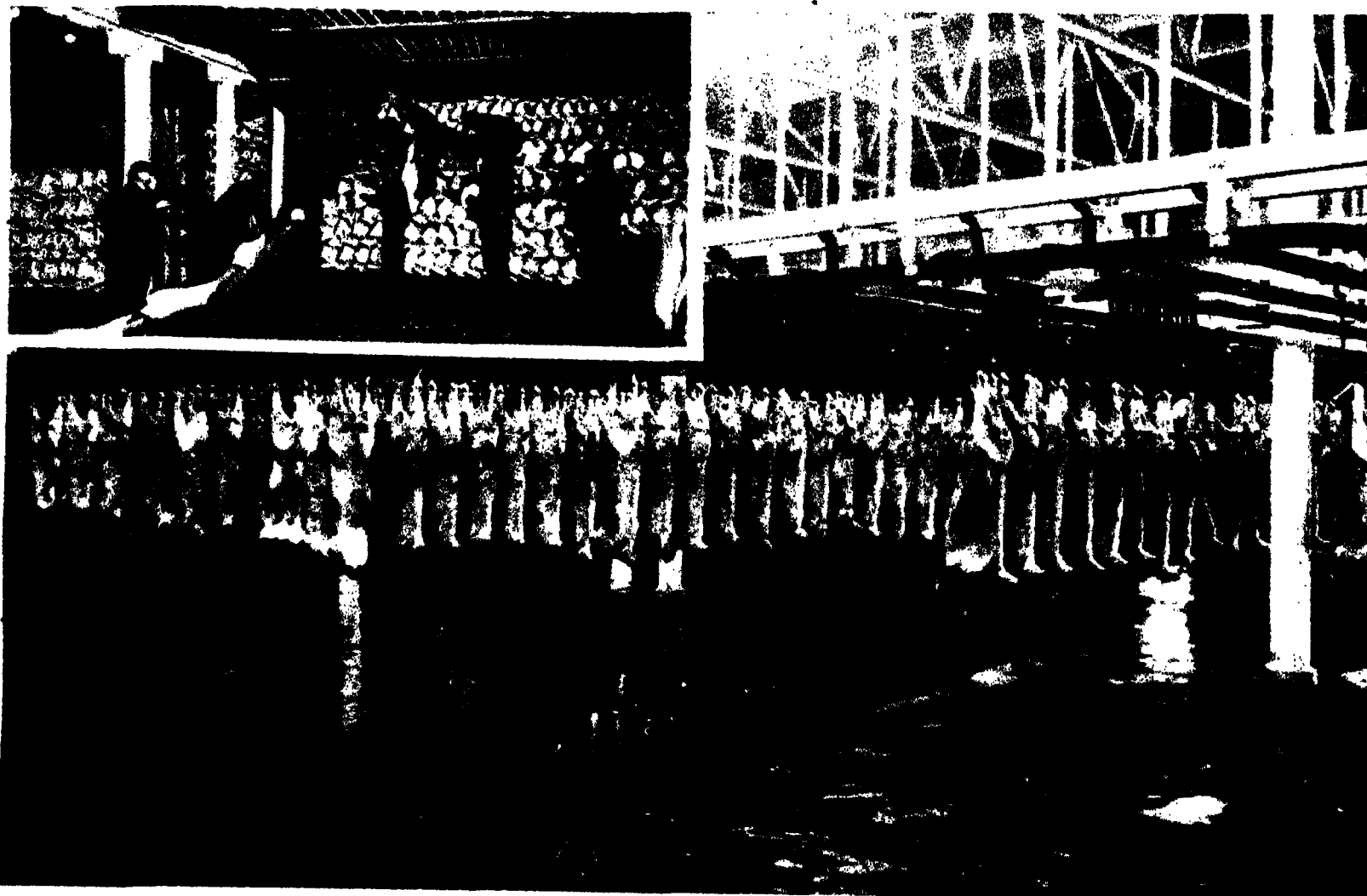
The picture shows a sheep sale in New Zealand, from which most of our mutton comes. Buyers congregate from a wide area.



Courtesy, High Commissioner for New Zealand

WHERE SHEEP BECOMES MUTTON IN A MOMENT

The killing is done in clean, up-to-date slaughter houses. The sheep are killed in the pens shown on the left hand side of the picture, after which the carcasses are skinned, dressed and set over on hooks to the cooling room seen on the right.



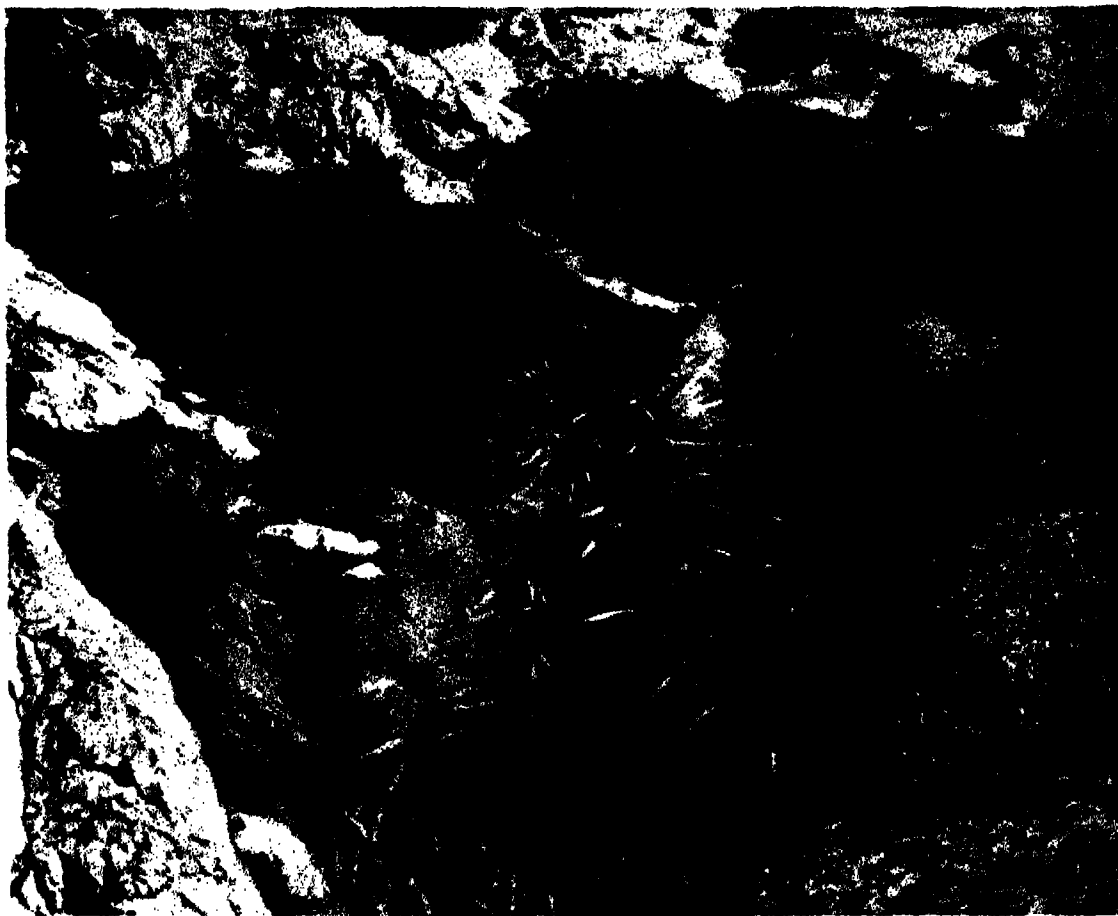
Courtesy, High Commissioner for New Zealand

TENDER JOINTS IN SERRIED RANKS

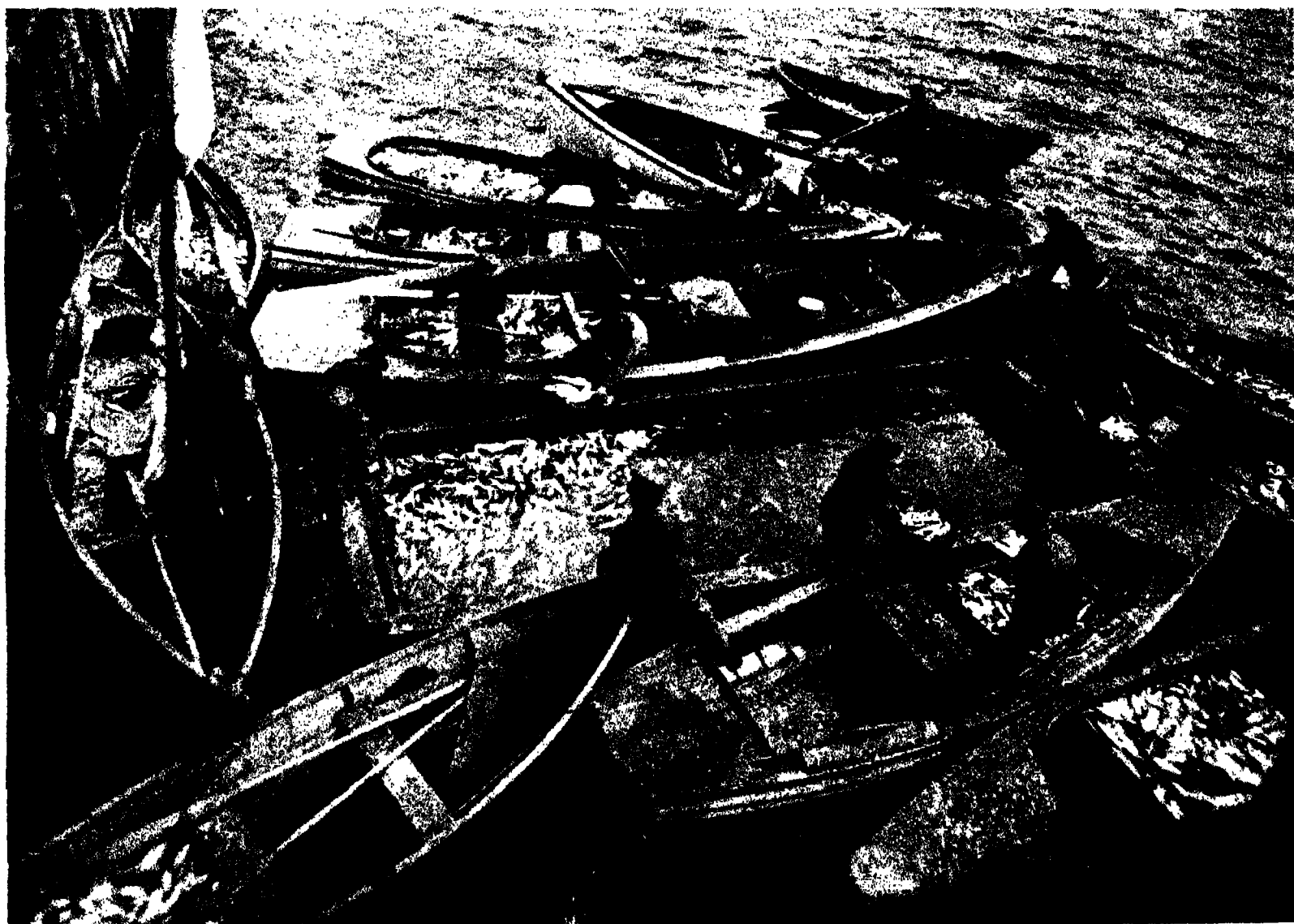
The carcasses are next placed in cold storage to await shipment. (Inset) Aboard the ship the carcasses are placed in chambers that are kept cold and at the same temperature during the whole of the voyage. On arrival the carcasses are already thawed.

MARVELLOUS OBEDIENCE TO NATURE'S LAW

The salmon, after a stay in the ocean, return to the rivers to spawn. They pass up-stream in such huge numbers that they sometimes push one another out on to the banks of the river. The annual movements of fish and birds are one of the mysteries of nature. Do they follow a leader, or is the whole affair purely instinctive?



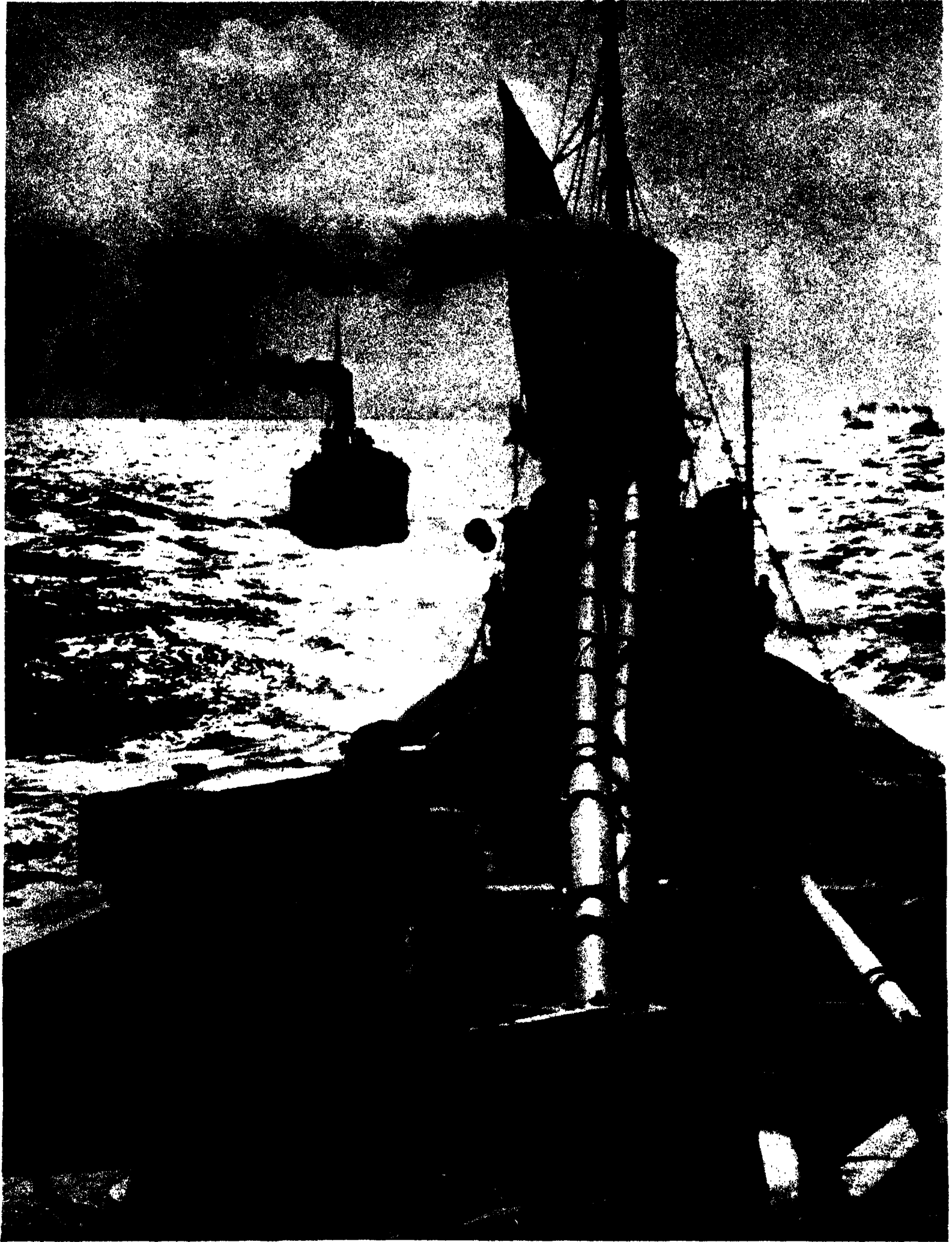
Courtesy, Canadian Govt.



Courtesy, Canadian Govt.

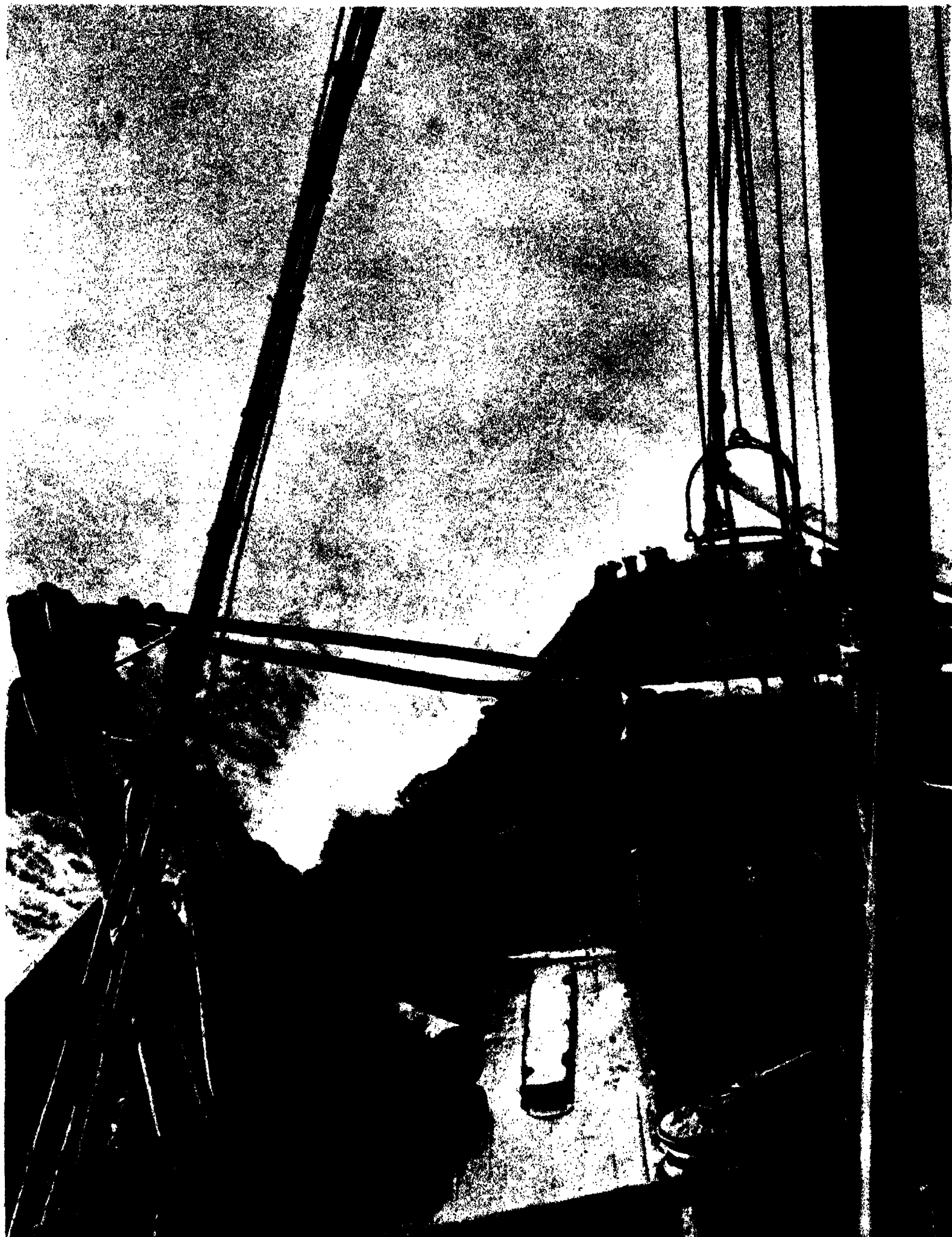
A GLITTERING HARVEST OF THE DEEP

The salmon are caught in nets and hauled up into flat-bottomed "scows" where they are sorted and the smaller ones returned to the water, either to await a future catch or to spawn and to provide the following year's harvest.



OUTWARD BOUND

This view is taken from the deck of a drifter setting out on its arduous work. The nets—some of which may be as much as 120 yards long—are fastened to the boats and moved through the water towards where the shoals of fish are expected.



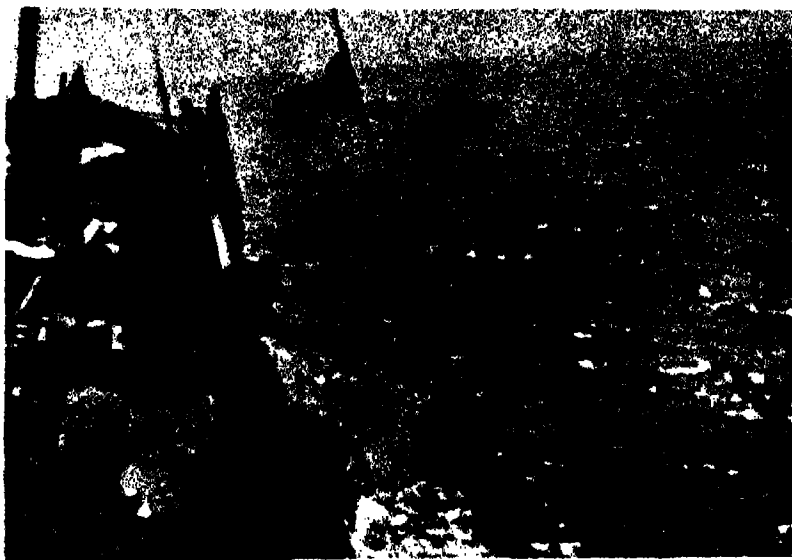
"Daily Herald"

BATTLING THROUGH!

In storm or shine the drifters must carry on. Here is a vivid picture of a breaker taken bow-on and splintering in icy spume across the decks. During the war these little vessels were used to patrol the narrow seas and to maintain barrages.

HOW MAN FEEDS HIMSELF

TRAWLING



LOWERING THE "DANN"

The "dann" is a buoy carrying a flag by day and a lamp by night. It is attached to an anchor and marks the centre round which the trawlers operate in their pursuit of fish.



HEAVE, HO! AND UP SHE RISES!

Not an anchor, but the trawler's laden nets. Inch by inch the heavy load is raised. On a calm day this is difficult enough; in times of storms and gales a giant's strength is needed.



GREY DAYS AT SEA

Even in comparatively mild weather the heavy deep-sea swell renders the fisherman's life no easy one. This picture of a hissing bow-wave reflects only a little of the heave and surge of life on a trawler, ever menaced by the ocean's rage.



THE FINAL EFFORT

Over the side comes the quivering weight of the catch to be shot directly into the vessel's hold that lies open to receive it. The end of a hard day's toil is at last in sight.



THE CATCH IS LANDED

Knee-deep amid the gaping fish stand the men, encrusted with silvery scales, handling the thick and dripping nets that hang above them, half in and half out of the water.

Pictures by the courtesy of the British Trawlers Federation



DRYING COD IN NEWFOUNDLAND

In Newfoundland fish are laid out in trays to be dried by the rays of the sun. When thoroughly dry they can be stored.



Courtesy, Norwegian State Rlys.

LIKE SOME STRANGE TROPIC FRUIT

In Norway cod are dried by being suspended from wooden poles. Here are rows of cod hung up by their tails to dry.



Courtesy, C.P.R.

MILKING BY ELECTRICITY

The old-fashioned way of milking is by hand, but in some countries—notably in New Zealand—milking may be done by electrically driven machinery. The practice is becoming increasingly popular in the milk trade in this country.



Courtesy, Express Dairy Co.

THE NEVER-CEASING WAR ON GERMS

In all up-to-date dairies milk is treated so as to destroy germs, and is bottled by machinery, under hygienic conditions.

BUTTER

HOW MAN FEEDS HIMSELF

VERY PRIMITIVE DAIRYING

To convert milk into butter it must be churned. In the villages of India this is often done by methods as primitive as that illustrated in the picture on the right.



Below is seen the primitive method of churning butter in skins used by the isolated Nestorians, a Christian sect who live in the fastnesses of Persian mountains.

Courtesy, Indian Railways

A VERY PRIMITIVE BUTTER CHURN



CHURNING MILK IN GOATSKIN BAGS

G.P.A.



Courtesy, N.Z. Govt.

A CRUMBLING CLIFF OF BUTTER

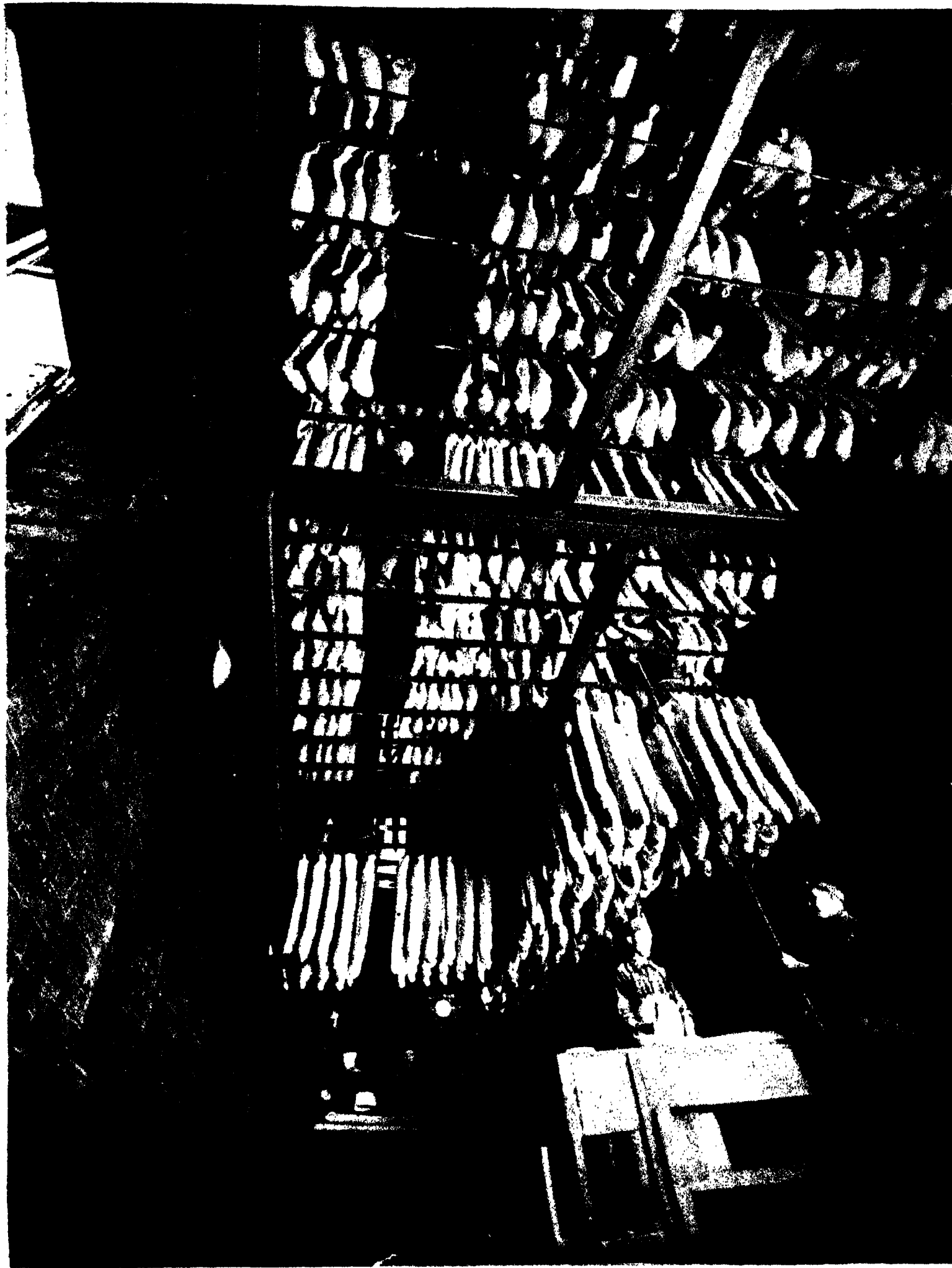
In New Zealand where huge supplies of butter are manufactured for export, the machine replaces hand methods. The butter in this picture, however, is for local consumption. Compare this with the primitive churns on the previous page.



Courtesy, N.Z. Govt.

BREAKING THE CURD OF GIANT CHEESES

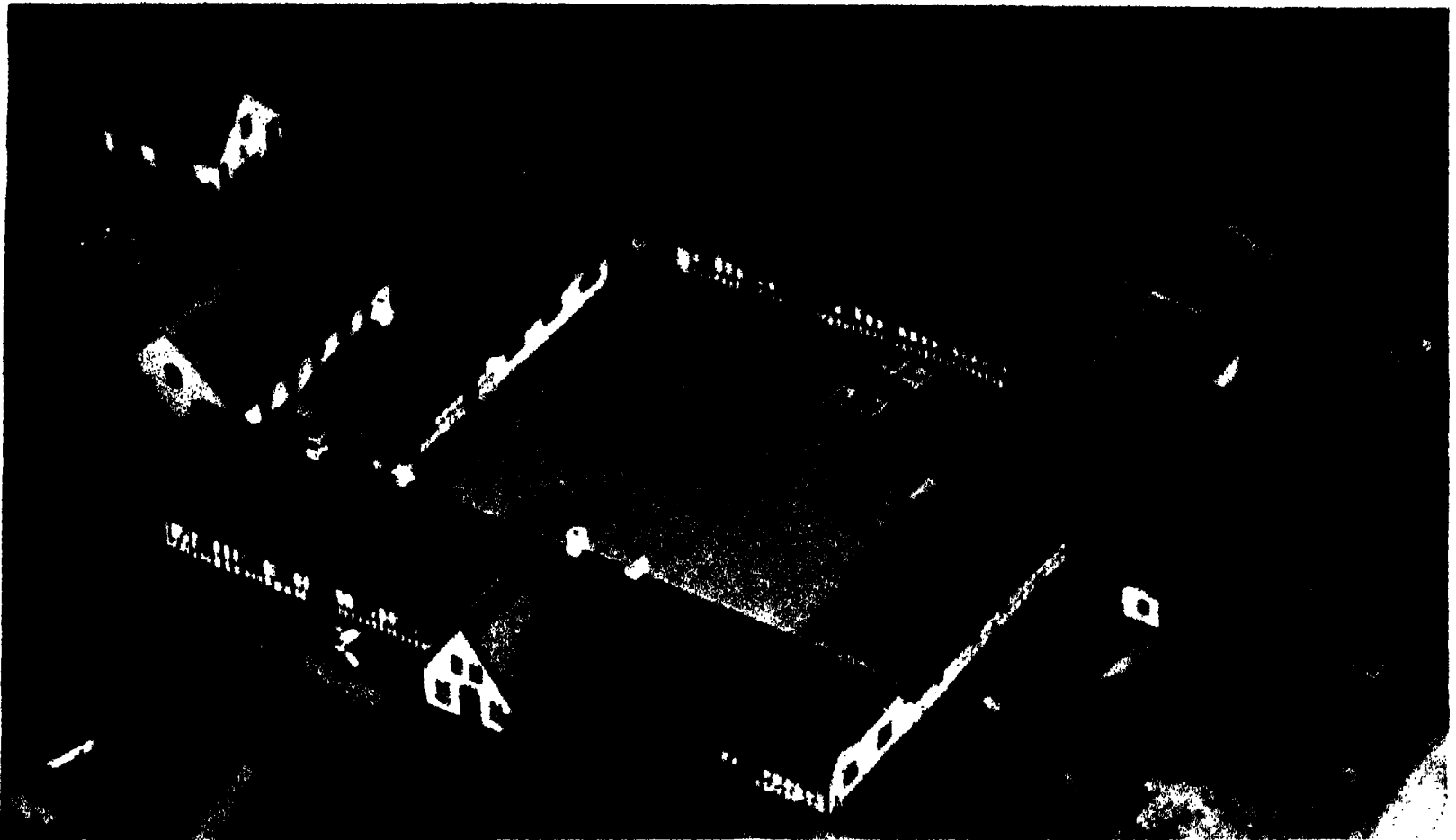
New Zealand also exports enormous quantities of cheese. Here you see the curd being broken in great vats which is afterwards salted, placed in moulds, and all the whey squeezed out. This is the central stage in cheese-making.



A DANISH "BACON BELFRY"

Courtesy, David Charles

Like rows of bells about to be rung, these sides of bacon are first salted at the tables, then hoisted aloft to dry and cure, and finally many will be exported. The odd effect of this photograph is due to the angle at which the camera has been held.



Courtesy, Sjørra Danske Landbrug

A GEOMETRIC ARRANGEMENT IN DENMARK

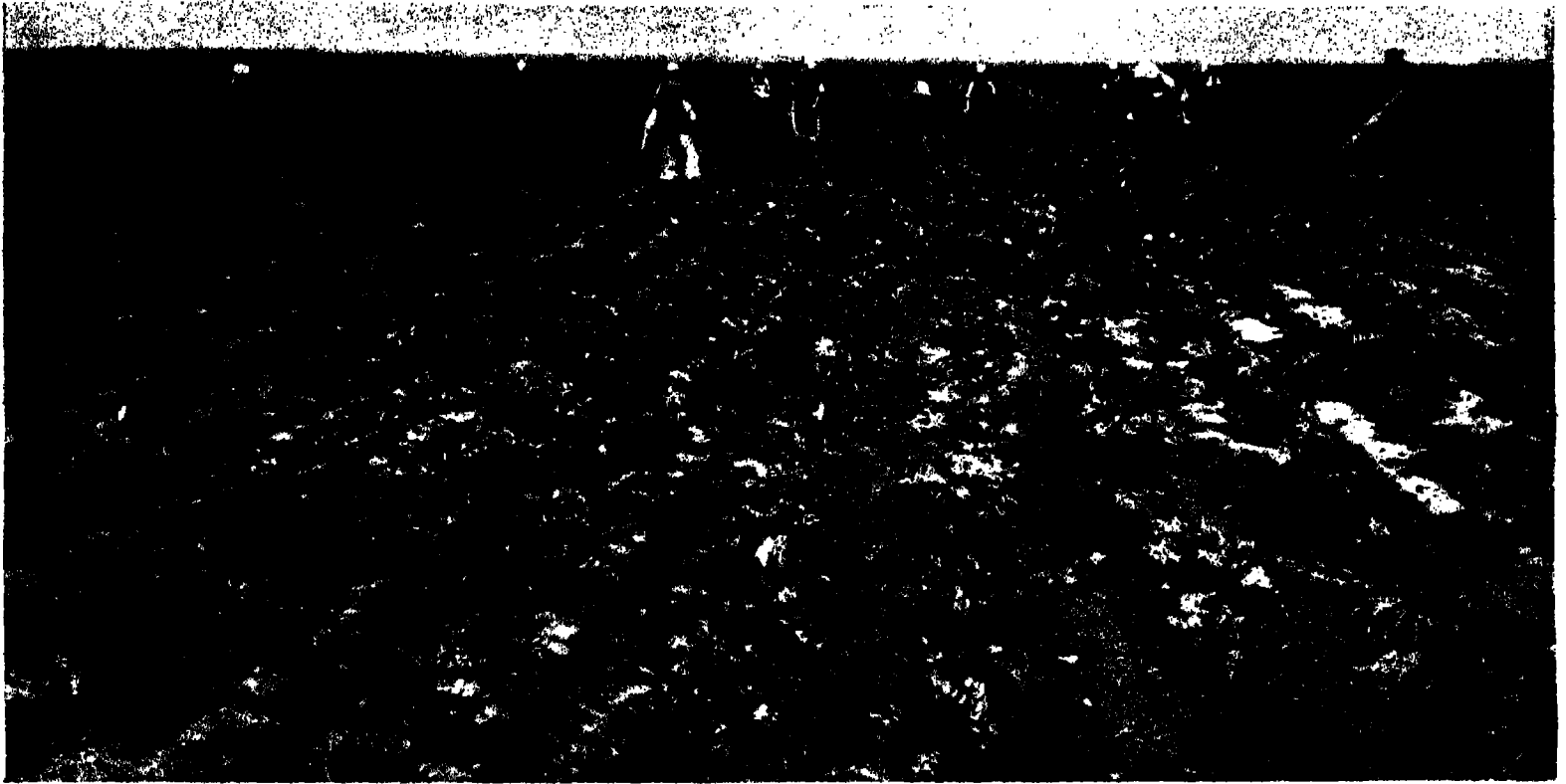
This medieval-looking block of buildings is really an up-to-date Danish pig-farm, one of the many that supply the world with Danish bacon. The farmhouse and principal buildings are built round the four sides of the square farmyard.



Courtesy, Society for Cultural Relations with Russia

ON A RUSSIAN POULTRY FARM

Poultry of some kind is kept in practically every country in the world, and eggs are exported, frozen, in large quantities. This view was taken of some fine Russian birds. Poultry is kept extensively in the agricultural districts of Russia.



Courtesy, Canadian Govt.

ROOTING SUGAR OUT OF THE GROUND

In more temperate climates sugar is extracted from the juice of the sugar beet. Here is a huge field in Alberta, Canada.



Courtesy, H.M. East African Dependencies

SPICES FOR COOK AND CHEMIST

Spices come from hot parts of the world, and include cinnamon, pepper, cloves, etc. These Zanzibar women and children are employed in picking the clove buds from the stems on which they grow. Afterwards, the buds are laid out on mats to dry in the sun. Fragrant cinnamon is the inner bark of a small evergreen tree which grows chiefly in Ceylon.



Courtesy, Messrs. Elder & Fyffe

THE LUXURIANT FOLIAGE OF THE BANANA

Amongst the most popular of our imported fruits is the banana. Only one bunch of bananas is produced by any one tree. It is cut from the branch with a knife at the end of a long pole and is received by a labourer on his shoulder. Little tram-lines are used to carry the bananas from the plantation to the ship. The bananas are quite green when picked, and are, in fact, still green when they arrive at green-grocers' shops thousands of miles away from the plantations, since they are highly perishable fruits when once they have been allowed to ripen.



Courtesy, Messrs. Lipton

FRAGRANT LEAVES THAT CHEER AND REFRESH

Tea is our most popular beverage. It comes to us mainly from India, China and Ceylon. The leaves and buds are picked by women and put into baskets carried on their back. The youngest leaves are used for the best quality tea.



G.P.A.

PALM LEAVES AS PARASOLS

To protect themselves from the blazing tropical sun, the women gathering tea in Ceylon use huge palm leaves as parasols.



Courtesy, Messrs. Lipton

A HARVEST DOWN THE MOUNTAINSIDE BY AIR

In Ceylon, the freshly picked tea is sent in sacks along an aerial line to the factories, where it goes through various processes.



WHERE THEY THROW AWAY THE CHERRY AND KEEP THE STONE

The coffee tree is an evergreen and bears a fruit something like a cherry that contains the berries. It is picked by hand chiefly by women and children and after the fruit has been pulped and the beans removed the latter are laid out to dry on cement floors. This view of a plantation was taken in Brazil, by far the most important coffee producing country in the world.

(Left)
The perfumed stars of a coffee blossom in Kenya.



Courtesy, Express Coffee Co.

COCOA

HOW MAN FEEDS HIMSELF



Courtesy, Cadbury Bros., Ltd.

A NURSERY FOR COCOA

Cocoa is another product of warm, wet regions. The Gold Coast produces more than half the world's supply. The seeds are sown in bamboo pots in a "nursery" as primitive as this one, and are later transplanted to grow into sturdy trees.



Courtesy, Cadbury Bros., Ltd.

REAPING A HARVEST ABOVE THEIR HEADS

The ripe fruit is a pod, containing a large number of cocoa "beans." The pods are cut off by men, women and children, and collected in baskets which are then carried to the factory for the beans to be extracted. This picture comes from Trinidad.



Courtesy, Cadbury Bros., Ltd.

A PULL-UP FOR PORTERS ON THE GOLD COAST

The negroes of West Africa carry their cocoa to the white buyer normally on their heads. At various places on the road there are racks on which sacks can be deposited while the carriers take a welcome rest on their hot, dusty journey.



Courtesy, Cadbury Bros., Ltd.

THE BROWN BEANS DRY IN THE SUN

After the beans have been extracted from the pods they are spread out to dry on long low platforms. These can be covered up immediately if rain falls, by means of the mat roofs that slide quickly along on rails and keep the beans quite dry.

The SCIENTIFIC PRODUCTION of FOOD

EVER since the beginning of time men have tried to find short cuts to the laborious business of food production. In olden days they tried mechanical devices and magic, and about ninety years ago they tried science which was then coming very much to the fore. The beginning was made in France, when Boussingault, who had spent his youth in adventurous travel, settled down about 1834 to a quiet life on his farm at Bechelbronn in Alsace and made experiments that were destined to play a great part in the history of agricultural science. The idea being well started it was taken up and carried a stage further in Germany by the most distinguished chemist of the day, Liebig. Finally, Lawes in England, who had already been making experiments and had some feeling for the practical side of things, saw the possibilities of benefiting the farmer held out by these early experiments. In conjunction with Gilbert he worked out ways of using all this knowledge for the practical purpose of growing more food.

Making the Farmer Produce More

When Lawes began in the late 'thirties there was hunger in the land as a result of the poverty brought on by the Napoleonic Wars. There was hardly any importation of food, and the British farmers had to grow most of what the nation required. Lawes' problem, like that of most other farmers of the time, was "How can I get more produce out of my farm?" He set out to do this by feeding the crops better. In those days farmyard manure was the chief food of plants, and had it been obtainable in unlimited quantities there would have been no difficulty. But it was not, and Lawes' achievement was that he applied the knowledge gained by the scientific workers to the problem of finding other ways of feeding field crops. He converted a barn into a laboratory, where he made these "artificial fertilisers," as they soon came to be called; then on various fields on the farm he started experiments to find how they acted on various crops. He soon found that he could feed plants with artificial substances obtainable cheaply and in immense quantities, instead of giving them only farmyard manure, of which there was a chronic shortage on the farm. He was at once successful. His yields of wheat, which had been only about twenty bushels per acre, soon rose to thirty or more; turnips, badly needed for

feeding his sheep and cattle, barley and all other crops, were increased proportionately, and Lawes set up a factory in London where he manufactured these new substances on a large scale, so that they might be available to farmers all over the world. The industry developed and has now attained colossal dimensions: in 1933 some thirty-five million tons of fertilisers were made in the various countries of the world.

Lawes' colleague, Gilbert, was never tired of demonstrating the results. The top picture on page 159 shows one of his favourite illustrations. The little turnip grown without manure, as he always used to tell farmers in the whimsical way of sixty years ago, is saying: "If you won't feed me I won't grow." One can go round a good many gardens and farms even to-day and see plants teaching the same lesson.

In actual practice it is about as difficult to feed a crop as to feed a baby, but it is also as easy when one knows how to set about it. Agricultural experiment stations have, therefore, been set up in all civilised countries of the world to find out how, with each changing requirement of the world, the crops and animals can be fed to the greatest advantage. Of these experiment stations Rothamsted is by far the oldest. The laboratories that grew up from Lawes' original barn now occupy three large blocks of buildings.

Nowadays margins of profit on the farm are cut so finely that advice to the farmer must be nicely worked out before it is given; for an error of 5 per cent. may make all the difference between profit and loss to the farmer. So the simple experiment laid out in an ordinary field has now developed, as shown in the picture on page 160, into an elaborate experimental field laid out in plots on a carefully considered plan.

Artificial fertilisers are now part of the routine of most farms and the information obtained at the experiment stations is spread widely among farmers. The result has been that crops yields have increased enormously in the civilised countries of the world during the last eighty years: the amounts of increase have varied from 50 to 200 or 300 per cent., and it is no exaggeration to say that the large populations of Western Europe could not be fed without these artificial fertilisers.

The next great triumph in applying science to food production was achieved by the plant

THE SCIENTIFIC PRODUCTION OF FOOD

breeders. Among the most striking results of plant breeding are those achieved in Canada. The western prairies had resisted all attempts at successful cultivation so long as only the old sorts of wheat were available. Then quite by accident a European variety, called in Canada Red Fife, was found which grew well in the southern part, but the more northern regions still remained untameable. The trouble was that the autumn frosts came on too soon and killed the wheat before it was ripe. Varieties were needed that ripened earlier: the plant breeders using the new science produced them; they are shown on page 161.

Plant breeders under Farrar achieved equally striking successes in Australia. Here the problem was not the early frosts but the shortage of rainfall, and the plant breeders set out to find wheats more tolerant of drought than those already in cultivation. They were successful, and with each sort they have been able to reduce the amount of rain needed for the growth of the crop: so they have pushed the belt of wheat cultivation further inland into regions formerly used only for sheep runs or even left wild.

Another triumph has been the successful development of irrigation, whereby millions of acres that lay as barren wastes in the time of our fathers have been reclaimed and are now closely settled with a busy population of human beings. The agriculturist, the engineer, the chemist, the plant physiologist and the plant breeder have all had to play their part, for directly man starts irrigating the dry regions of the world he begins to upset Nature's balance and that is always asking for trouble. The water must be found and delivered to the field and then it must be used in a way that accords with the properties of the soil and the sub-soil. The new conditions are almost certain to favour many kinds of diseases and pests and to bring about physiological troubles in the plant that may lead to the ruin of the whole enterprise. A little neglect, a small mistake, a bit of bad workmanship, and it all goes to pieces. Nothing is more attractive to look at than a good irrigation scheme, but as the picture on page 162 shows, there is no spectacle more pitiful than an irrigation failure.

The efforts of the plant breeders, the agricultural chemists, the agriculturists and the engineers have brought into cultivation vast areas of the world which eighty years ago were desert. Vast

stores of food and other raw materials are now produced in regions that to the men of an older generation seemed doomed to be for ever sterile.

To-day a new problem confronts us. It is no longer a question of producing more food, but producing it more easily and with greater certainty; to obtain if possible 100 per cent. return for our efforts and to reduce to a minimum all losses.

Science is screwing up efficiency all round: adding 5 per cent. to the productiveness here; cutting off 5 per cent. of the loss there; enabling nine men to do what had always hitherto required 10. That, of course, has raised new social problems: what are we to do with the man displaced and no longer wanted on the farm? At present he drifts off to the town. New difficulties are perpetually arising. As our efficiency of transport increases, so also do the number of pests and diseases with which we have to deal. If a pest attacks a crop in any one part of the world it is only a matter of time before that pest attacks that same crop elsewhere. The Colorado beetle was once quite harmless to agriculturists, then it began to damage the potato crop and started wandering. It spread over the United States in search of potatoes, doing damage wherever it went. Then it crossed the Atlantic and got into France, always damaging the potato crop. Now it is trying to get into England, at present via the Tilbury route. The Ministry of Agriculture officials are keeping a sharp watch, but the beetle is small and easily eludes them. Will it be able to get into our country or shall we be successful in keeping it out? This is one of the questions of the future. Once it comes in, it will probably do many thousands or even millions of pounds' worth of damage unless in the meantime strict scientific precautions are taken against it.

The lesson of all this is, that our efforts to improve food production must be continuous. Man is doomed to a perpetual struggle against Nature in order to keep his footing on this earth. Each generation fights its battle and either wins or goes under; each new generation has a new battle to fight; if it wins its children survive, but they in their turn will have their trial, for it is written: "In the sweat of thy face shalt thou eat bread," and no amount of scheming will ever help us out of that liability.

SIR JOHN RUSSELL, F.R.S., D.Sc.

THE SCIENTIFIC PRODUCTION OF FOOD

WITHOUT FOOD NOTHING CAN GROW

These photographs indicate, almost without further explanation, the triumph of artificial fertilisers and the necessity of feeding the growing plant. The little plant had no fertiliser, the middle a small amount, and the third represents normal nourishment.



FEED THE GRASS AND YOU FEED THE SHEEP—1

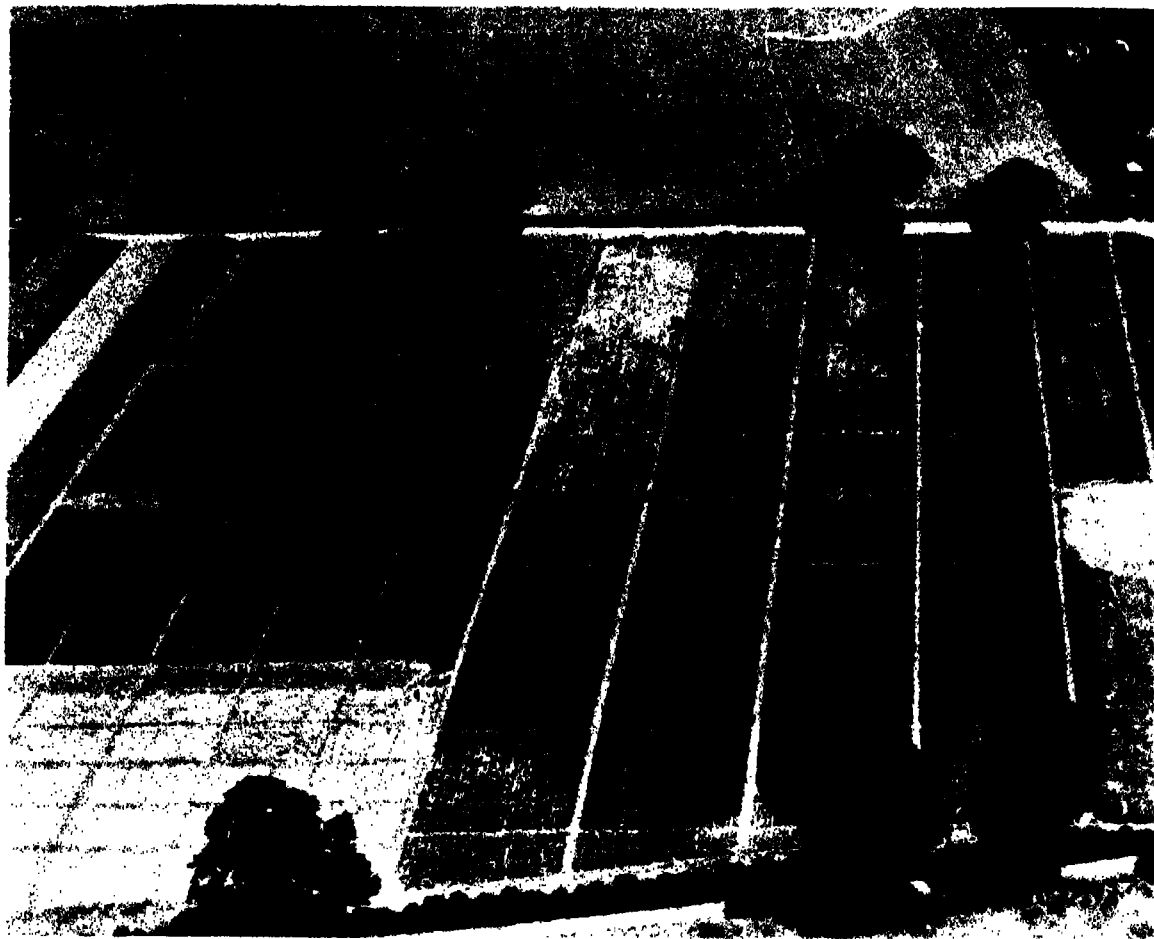
The sheep go hungry on the natural grass land that has not been fed with artificial fertiliser. The expense involved in fertilising is amply repaid by healthier and therefore more profitable animals.

FEED THE GRASS AND YOU FEED THE SHEEP—2

Here the land adjoins that illustrated in the previous picture and is of the same area. You can see for yourself that it carries more sheep and feeds them better because its grass has been nourished with artificial fertiliser. This is certainly a conclusive argument and illustrates the value of scientific research.



THE SCIENTIFIC PRODUCTION OF FOOD



"AND SOME FELL
ON GOOD
GROUND"

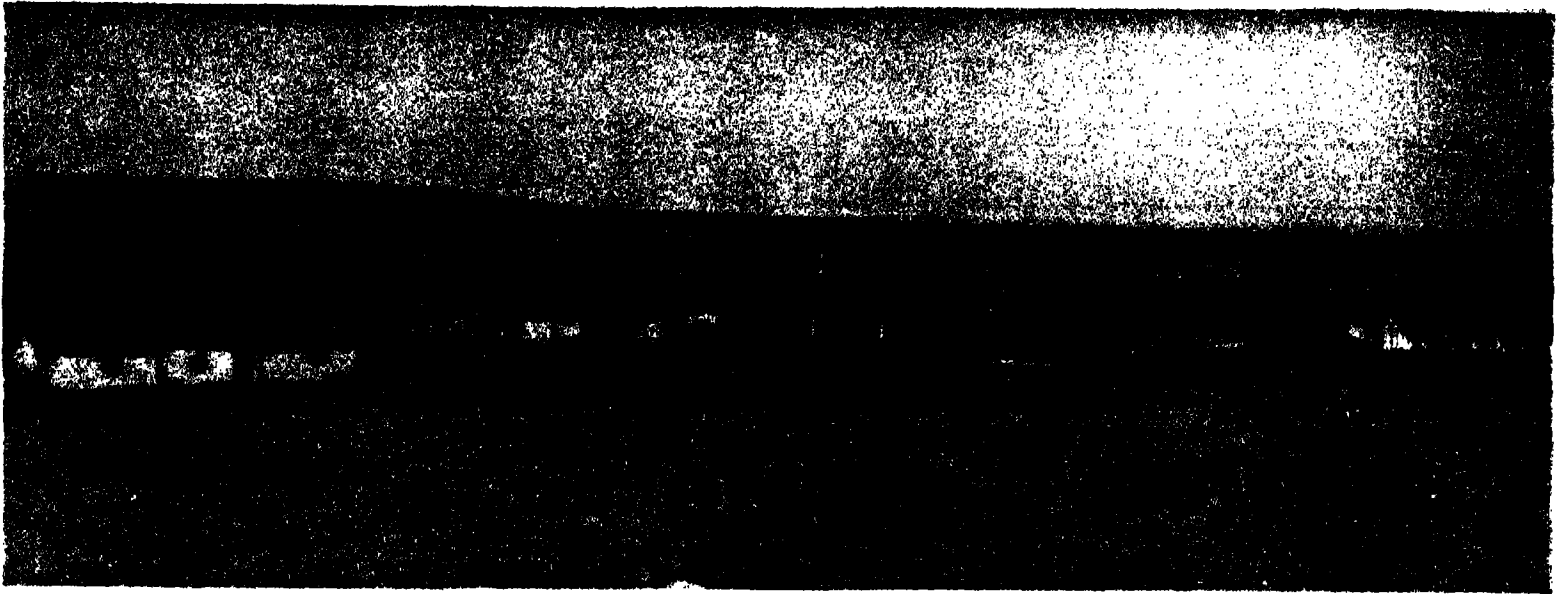
An experimental field at Rothamsted. Note that some strips are better than others, some plots are very poor and some good. This is a fruitful field for students of agriculture to make notes under conditions which provide practical examples of all kinds of earth and fertilisers



NATURE PAYS FOR MAN'S MISTAKE

This picture illustrates the need for watchfulness. Certain artificial fertilisers wrongly used gave for a time heavy crops, but finally reduced the land to sterility. As is the case with medicine, expert knowledge is absolutely essential.

THE SCIENTIFIC PRODUCTION OF FOOD

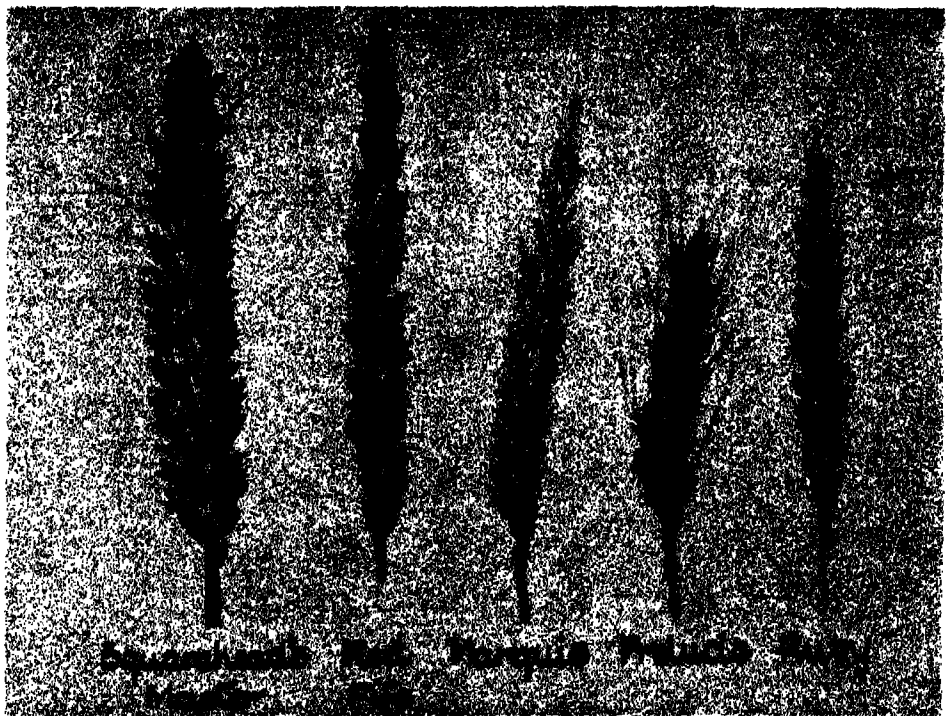


ROLLING MILES OF USELESS LAND

The Canadian prairie as it was until careful scientific investigation discovered the special kinds of wheat that would grow there.

THE PRECIOUS GOLD FROM NATURE'S STORE

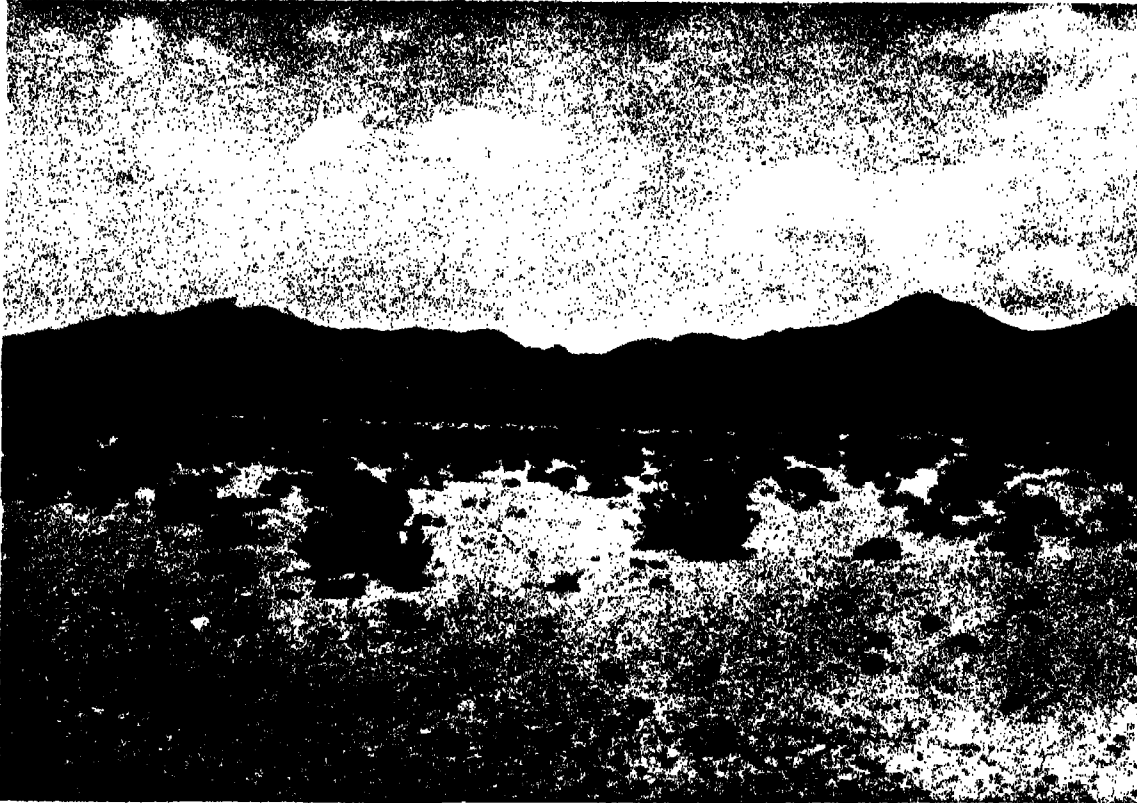
Here are various types of wheat, some of which made possible the cultivation of the Canadian prairie. Squarehead's Master is excellent in England, but useless on the prairies. Red Fife is very good in the southern prairies, though it is useless further north. Marquis, which requires a shorter growing season, does well in the north. These discoveries have prevented a considerable wastage which previously occurred owing to the sowing of the wrong type of seeds.



A SMILING LAND OF PLENTY

What the prairie land shown in the top picture became when the Red Fife and Marquis types of wheat were found.

THE SCIENTIFIC PRODUCTION OF FOOD



A BARREN WILDERNESS IN SOUTH NEVADA

Great areas of land once like this are now reclaimed and cultivated through the successful application of scientific discoveries. In areas like this the problem to be solved is how to obtain the necessary water supply for irrigation.

THE DESERT CONQUERED

Irrigation changes the desert into a flourishing orange grove. Here the water problem has been solved and so it has been possible to take advantage of the heat of the sun to cultivate luscious oranges in profusion.



THE DESERT WINS

The desert wins: the water failed and the whole enterprise collapsed. The resultant havoc is almost worse than the original desert waste before man interfered with his scientific methods in Nature's plans.

WHAT MAN WEARS

WHY do we wear clothes? The answer is not so simple as it may seem. It is, in fact, difficult to decide what is the exact truth as to the origin of our attire. It is pretty certain that it was no feeling of modesty which led man to forsake his natural state. The motive may have been a desire for bodily protection, or it may have been a desire for ornament, or at times, both. These are certainly the chief motives to-day amongst not only the most primitive peoples, but also amongst the most civilised. Modesty may have played an important, if subsidiary, role in as much as the women of most countries wear more than the men. Even in these immodest days the male members of society can, without fear of reprobation, disport themselves on the popular sunbathing beaches with little more covering than their savage brothers, whereas the minimum female clothing required by conventional standards covers a much larger area.

Painting and Tattooing the Body

It seems most probable that the adoption of clothing is due, on the whole, to a desire to decorate the human body. Amongst some primitive people the skin is scored to produce crude patterns that cannot afterwards be removed. The use of paint is common among savages. In its simplest form it is employed as a mere daub of colours; in its more developed form it is pricked into the skin by a tattooing process.

The desire for ornament amongst primitive people is evidenced not only by the trouble they take to secure feathers, shells, coloured stones and animals' teeth for necklaces and armlets, but also by the personal discomfort to which they are willing to submit in order to be in the fashion. Teeth may be filed to a point or actually knocked out with a stone and holes bored in the ears, nose, lips or other parts of the body for the insertion of feathers, sticks, bones and mere stones. The European woman may pretend to regard a hole through the nose for a ring or a jewel as barbaric, but she bores holes through her ears for a similar form of adornment.

Women Encased in Metal Rings

With the discovery of metals a greater variety of bodily ornament became possible. Amongst a few tribes the women are practically encased in

metal rings. But when we read of an African beauty who has to be accompanied by a water carrier, who, from time to time, cools the copper rings of her mistress, that have become hot in the sun, we can be sure that vanity and not protection is the dictator of the fashion.

Amongst most civilised people ornamentation of this extreme type becomes less important, but it does not disappear. The traditions of savagery maintain their hold in rings, bangles, and jewellery of all descriptions. Where clothing has once been adopted, mutilation may largely vanish, because it no longer serves much purpose; and paint, for the same reason, be less widely spread on the flesh. But the old tradition refuses to subside altogether and is seen in the painted lips and cheeks of women in all civilised countries.

Where clothing is adopted in order to protect the body, the environment often exercises a fairly decisive influence. The Andaman islanders use paint, not simply for decorative purposes, but as a defence against heat and mosquitoes. Eskimoes wear, to keep out the cold, the furs of animals that also supply them with food. Australian and Brazilian tribes are known to cover themselves with skins to ward off sun and rain.

The commonest materials for clothing are obtained from the vegetable world. Not only do the inhabitants of some warm countries fashion their garments from bark, leaves or grass, but more people wear clothes of cotton than of any other material. Flax and cotton were early twisted to form yarn which was woven into cloth on primitive hand looms far back in the story of man.

How Climate Affects the Art of Dressing

The people living in cold or temperate climates naturally had more incentive to strive towards adequate bodily protection, and it is amongst them, particularly of temperate latitudes, that the art of dressing has most fully developed. In these latitudes spinning and weaving have reached an almost automatic mechanical stage, and all types of animal and vegetable products are called into use. The basic materials remain much the same, but special methods of spinning, weaving, dyeing and finishing give an endless variety of fabrics, while rubber for waterproofs and wood pulp for artificial silk have added to the opportunities open to the inventor and designer of raiment. Skins, one of the simplest means of protection, are still

WHAT MAN WEARS

of vital importance, but whereas the savage merely dresses his skins and furs with varying degrees of skill, the more civilised peoples have learned the process of tanning, which converts the skins into leather.

Clothing is, naturally, at first very simple in shape. Some negro tribes in Africa are clothed in mere strips of cloth; some American Indians wear a blanket with a hole in it through which to push the head. The next step is to fasten skins or strips of cloth together by means of rude stitches or other simple methods in order to produce a garment of more definite shape. In time this develops into suits and dresses specially adjusted to the needs of the individual wearer.

In warmer climates the garments are usually of a loose flowing type, and worn as a protection against the rays of the sun. The flowing robes of the Arab are a good example of this. In those countries where this form of dress is dominant, very little change has taken place throughout the centuries. The people of to-day dress much as they did 2,000 years ago.

For Protection and Display

In colder climates clothes that fit the figure are in fashion, in the first place because they are a better protection for the body. But just as the Andaman islander begins by painting to keep off mosquitoes and ends by painting in patterns to satisfy his vanity, so the more civilised peoples also combine the ideas of protection and display. Hence from the latter the innumerable and rapid changes in fashion which are so characteristic of the dress of white women all over the world.

It is, perhaps, a pity that European and American fashions in dress have spread so widely amongst other peoples and that in Europe, as elsewhere, definitely national types of costume are dead or on the wane. Much that was picturesque has been lost to the world in the last half century. Even such conservative people as the Chinese can now often be seen, even in their own country, in the conventional clothing of western civilisation.

The Mass Production of Clothing

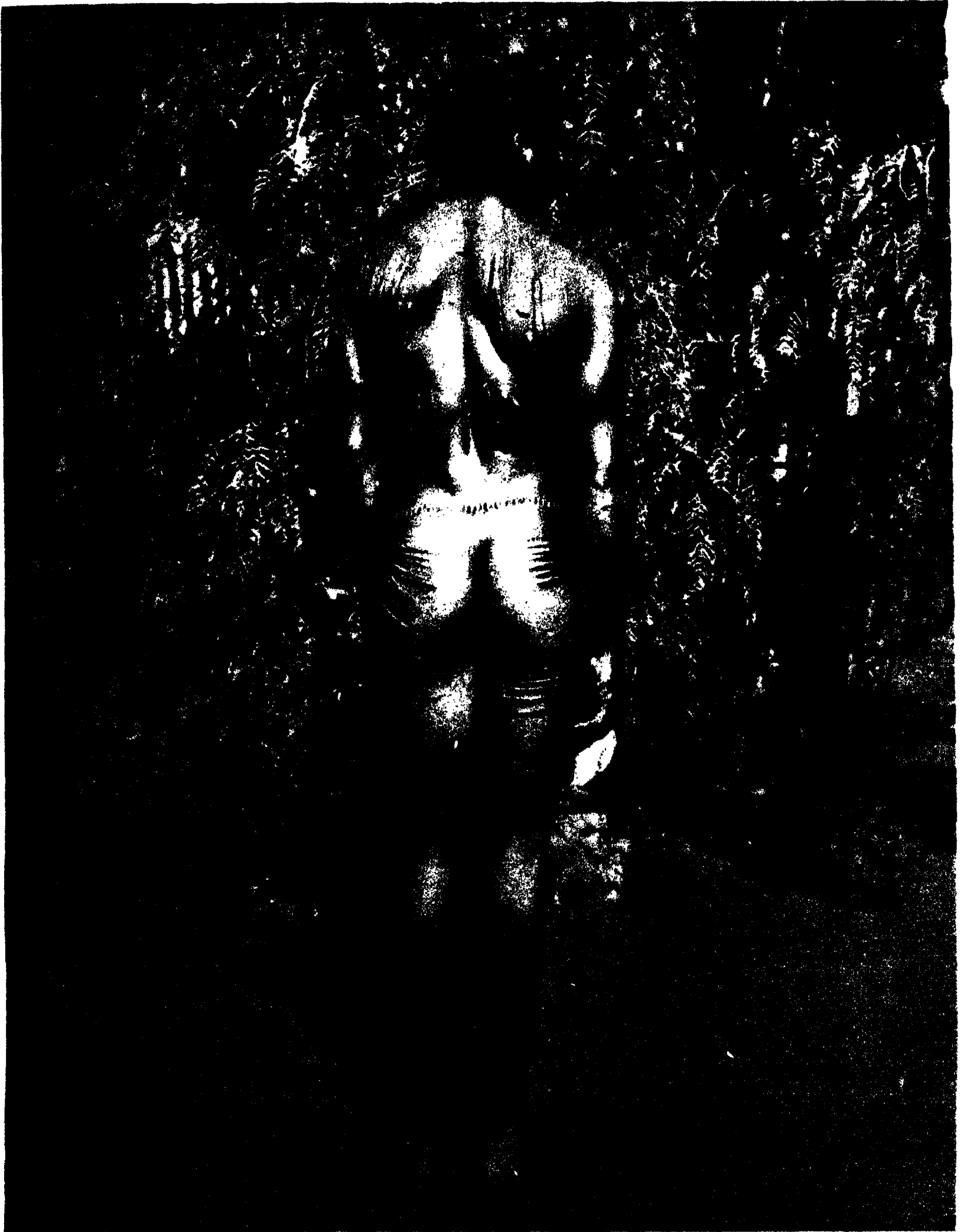
Whilst the modern epoch demands that our clothes should "fit," the fact that garments tend to become more and more standardised, according to the dictates of fashion, and that many people are more or less of "stock size," has led to

the transfer of the production of clothing from the home to the factory. Mass production was not possible in the days before the industrial revolution. In this mechanical age the laborious hand loom and hand sewing are found only amongst our primitive contemporaries or the enthusiastic devotees of arts and crafts. The invention of the sewing machine did for clothing what the spinning jenny and the power loom did for the manufacture of textiles. It also enables Dame Fashion to dictate to women in every sphere of life, from the humblest to the highest, for the machine turns out tremendous quantities of clothes that could only be absorbed by persuading every woman that she could not possibly wear last year's clothes!

Clothing of the Future

In most civilised countries there is at present a definite tendency towards more rational and healthy types of clothing, but fashion and tradition remain powerful enough to prevent the adoption of dress that is perfectly adjusted to its purpose. The existence of a society for the reform of dress shows that the ideal of clothing the body reasonably and healthily is important in the minds of a section, however small, of society. But its supporters are inclined to forget that the old tradition of clothing for adornment will put up a tough and probably victorious fight. There are, however, a number of pursuits where, to succeed in them, vanity must be subordinated. The swimmer, the athlete, the tennis player, have evolved clothes, particularly in the case of women, that are very adequately suited to this purpose. Factory workers and some office workers similarly wear garments where practicability is the only criterion. But in most walks of life Fashion and Custom are allowed to rule supreme in this important matter of clothing, and both, apart from lacking in practicability, are also singularly lacking in beauty. Until the power of vanity is subordinated by that of hygiene, the ideal of the perfect adjustment of clothing to human needs will remain a goal, rather than attainment. "Even the most civilised portion of our human world is only beginning to comprehend what rationality, morality and beauty in clothing really means."

D. CUMMINS, B.A.



Commonwealth of Australia

MAN'S EARLIEST CLOTHES

Amongst a few primitive people the place of clothing is taken by some form of bodily decoration. The ridged design on the back of this Australian aborigine is produced by gashing the skin and rubbing wood ashes into the cuts, leaving raised scars.

WHAT MAN WEARS



G.P.A.

TATTOOED SAVAGES OF THE AUSTRALIAN WILDS

These savages of the Australian wilds have tattooed their bodies to make themselves more fearsome-looking in battle.



E.N.A.

FIJIAN DANCERS' VEGETABLE SKIRTS

These girls are "making up" for a Mekke dance. Their clothes are made from the bark of the paper mulberry tree. It is torn off in long strips, soaked in water, and beaten together by wooden mallets. Then it is dried and brightly ornamented.



E.N.A.

THE FAMOUS GRASS SKIRTS OF THE HAWAIIAN MAIDENS

These are nothing more than long strands of grass hung from a belt. Nowadays these are no longer common except amongst the girls who dance the "Hula." Under the influence of Western "civilisation" traditional dress tends to become obsolete.

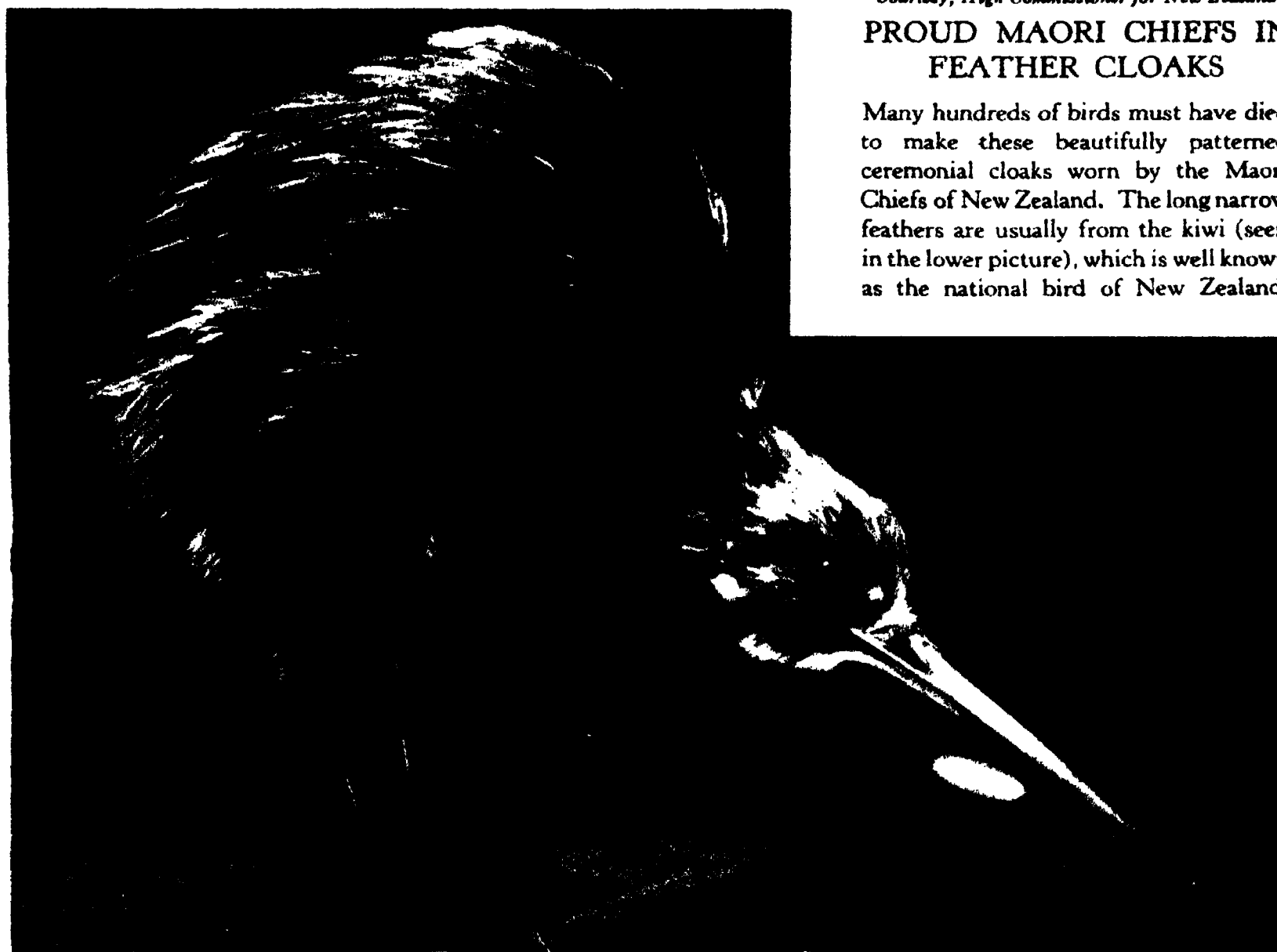
WHAT MAN WEARS



Courtesy, High Commissioner for New Zealand

PROUD MAORI CHIEFS IN FEATHER CLOAKS

Many hundreds of birds must have died to make these beautifully patterned ceremonial cloaks worn by the Maori Chiefs of New Zealand. The long narrow feathers are usually from the kiwi (seen in the lower picture), which is well known as the national bird of New Zealand.





Courtesy, Canadian Immigration Office

WHERE THE LADIES "RUN UP" THEIR OWN FURS

Tanning, which makes fur soft and pliable, is unknown among the people of the North. The skins are simply scraped and stretched out to dry as this Eskimo woman is doing in the same way that our ancestors did thousands of years before the age of machinery.



Courtesy, Commonwealth of Australia

THE BEST COAT OF ALL

The Merino sheep gives us wool of the finest quality. This fine specimen from Australia seems almost conscious of his importance in supplying one of the oldest and most useful clothing materials in the world.

SHEARING GOLDEN FLEECES BY ELECTRICITY

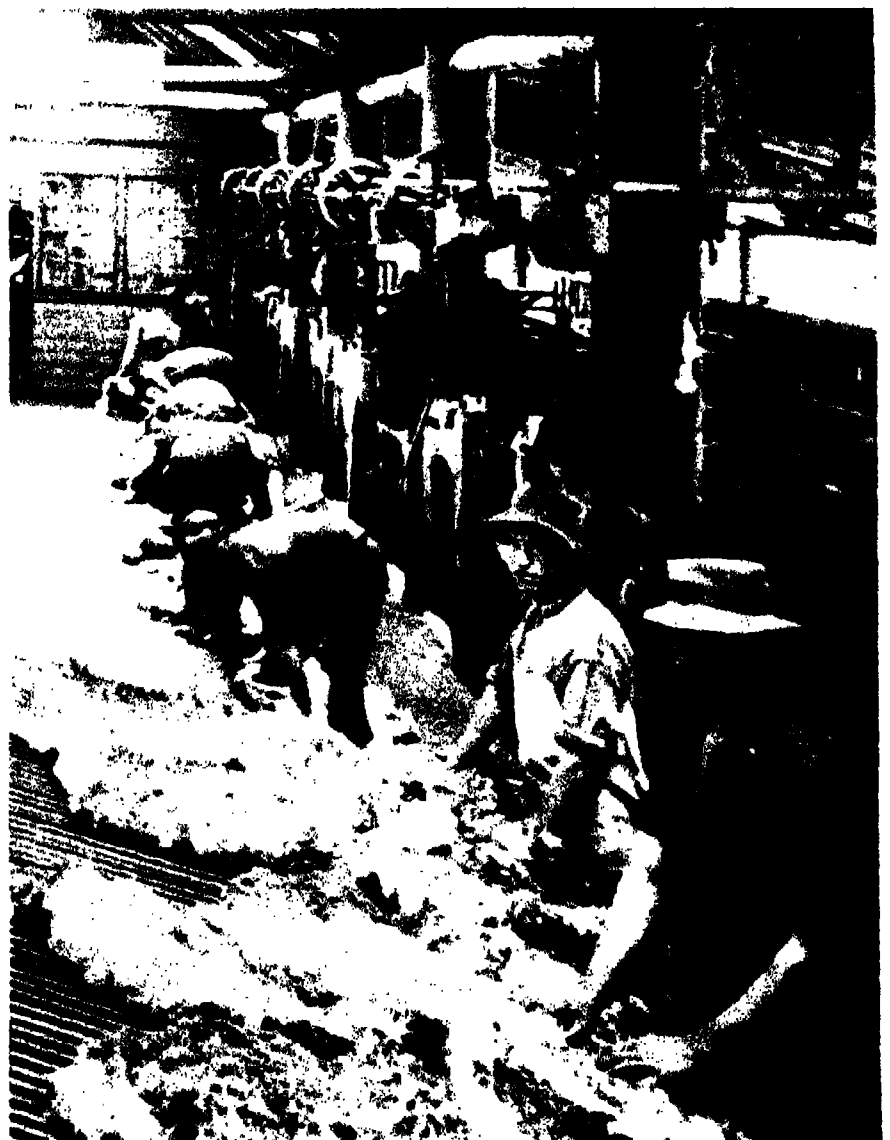
Where flocks are numbered in thousands, as in Australia, sheep shearing is done by electricity. The men at the back of the picture on the right are removing the fleece in one tangled mass which is then spread on the table in front and lightly rolled into sacks forming 400-lb. bales all ready for transportation.



Courtesy, Canadian Immigration Office

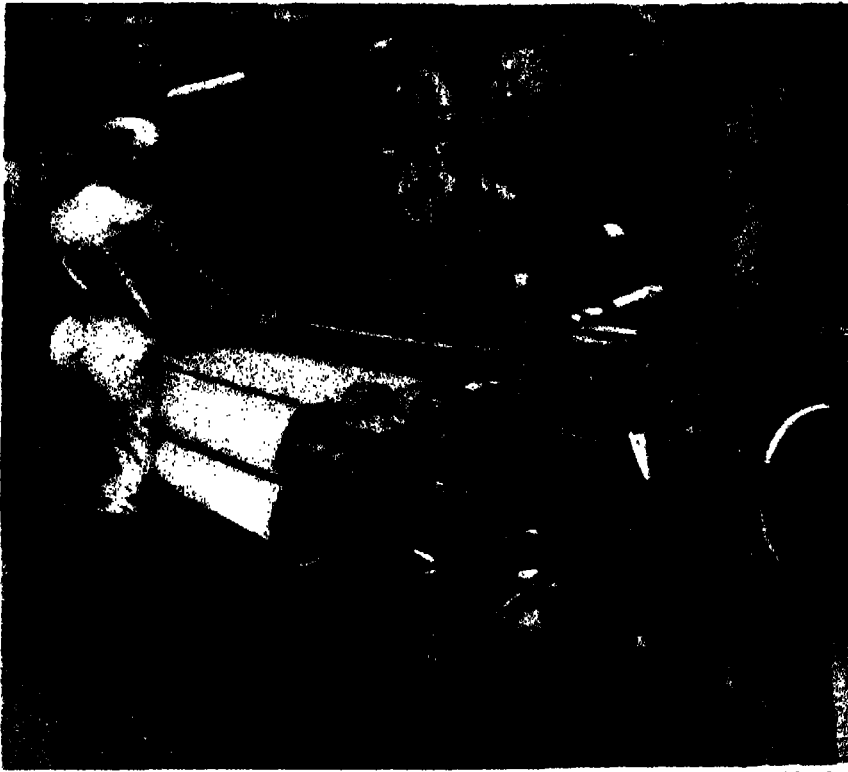
THE ESKIMO'S DOUBLE FUR COAT

Everyone has to wear thick furs in the icy wastes of the far North. This old Eskimo has made his shaggy suit by sewing two reindeer skins back to back so that there is fur on both sides.



Courtesy, Commonwealth of Australia

WHAT MAN WEARS



Commercial Graphic, Bradford

THE CLANKING ROBOTS OF THE FACTORY

Speed is our motto to-day and at Bradford, where this typical picture of a weaving shed was taken, complicated machinery can turn out yards of woven cloth more quickly than any human hand could do. But it is only imitating the movements of the Indian woman in the picture below. It cannot do better.



E.N.A.

THE BRILLIANT BLANKETS OF THE NAVAJO INDIANS

Man's mightiest mechanical inventions have not been able to improve upon the earliest principles of spinning and weaving. This Indian woman is laboriously weaving a lovely patterned blanket from the yarn that she has herself spun and dyed.



E.N.A.

A WAITRESS ON A THOUSAND WORKERS

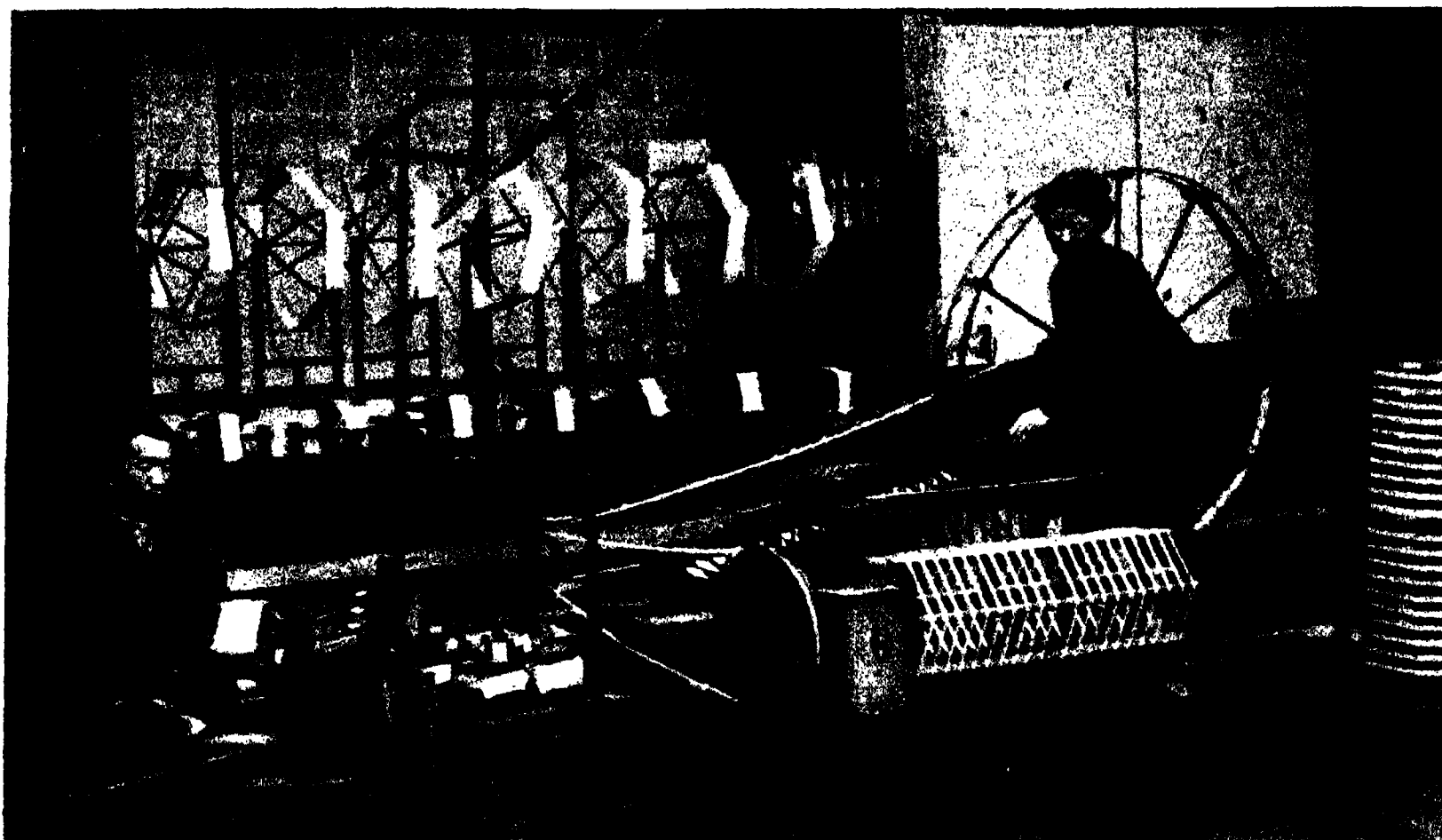
The old Japanese woman is lifting silkworms on to a fresh meal of tender green mulberry leaves. They have enormous appetites and must be regularly fed until at the end of a month the caterpillar starts to spin its cocoon of silk thread.



E.N.A.

UNDOING THE SILKWORM'S WORK

Unwinding the three or four thousand yards of silk contained in one cocoon is a delicate business, and workers must have neat and clever fingers. The fine threads from four or five cocoons are usually wound together to form a single thread.



E.N.A.

QUAINT MACHINES THAT SUPPLY THE WORLD

More than a quarter of the world's silk is produced in Japan, but only a sixth of that amount is actually woven into silk in the country. The highly-skilled man and girl in the picture probably earn about eightpence or tenpence a day.



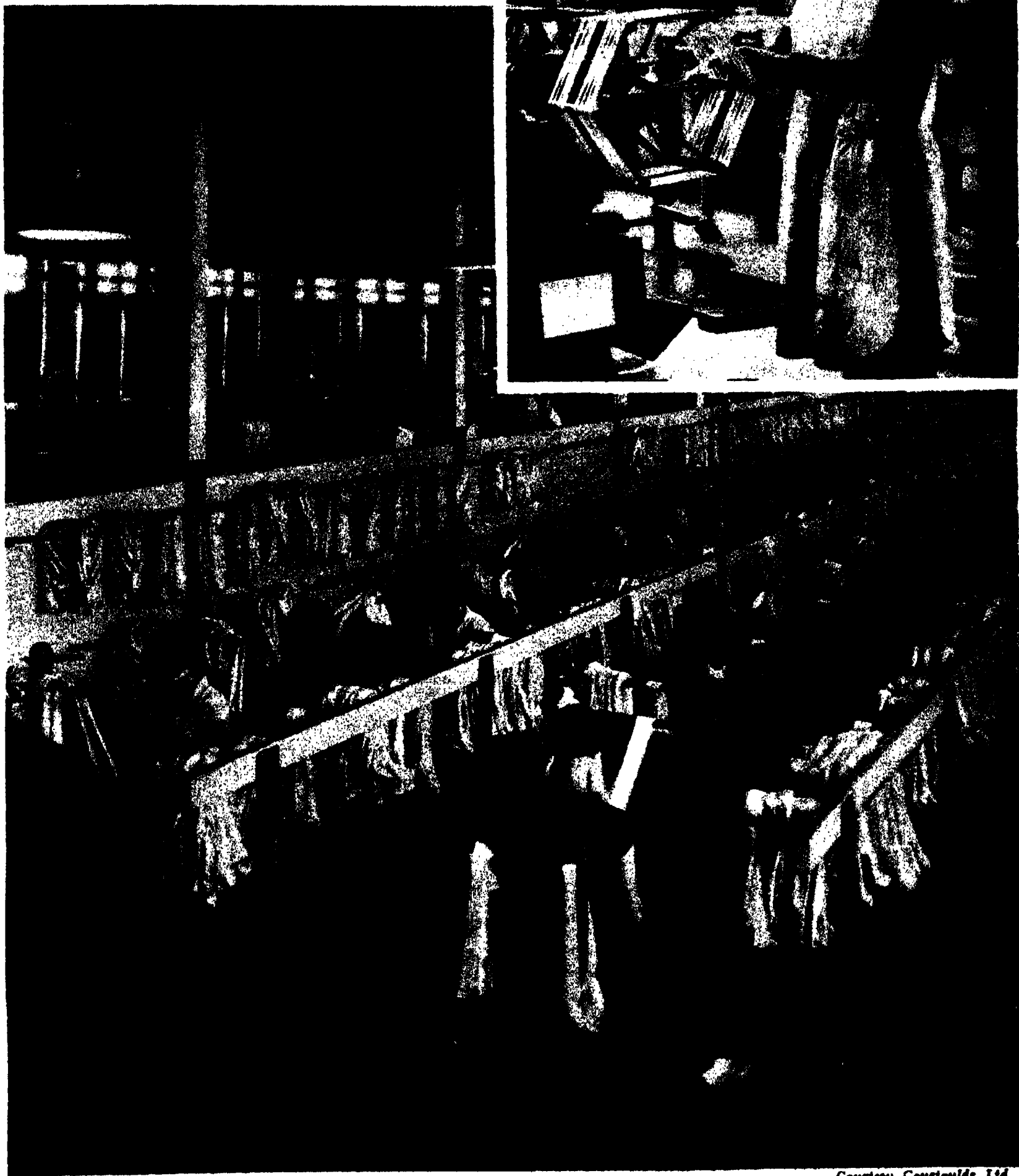
Courtesy, Courtaulds, Ltd.

MAN TURNS TO IMITATE A WORM

Artificial silk or rayon is made from cellulose, the principal substance that makes up the cells of plants. The picture shows sheets of cellulose arriving at a rayon factory. The comparatively new artificial silk industry is already flourishing.

SHIMMERING HANKS OF
SNOWY SILK

After the cellulose sheets have been treated with chemicals and spun into thread, the hanks are dried and carefully examined by girl inspectors. The very best quality must have no broken threads and must be perfect in colour and lustre. *Inset* : Winding a rayon cake into a hank on a machine similar to the Japanese.



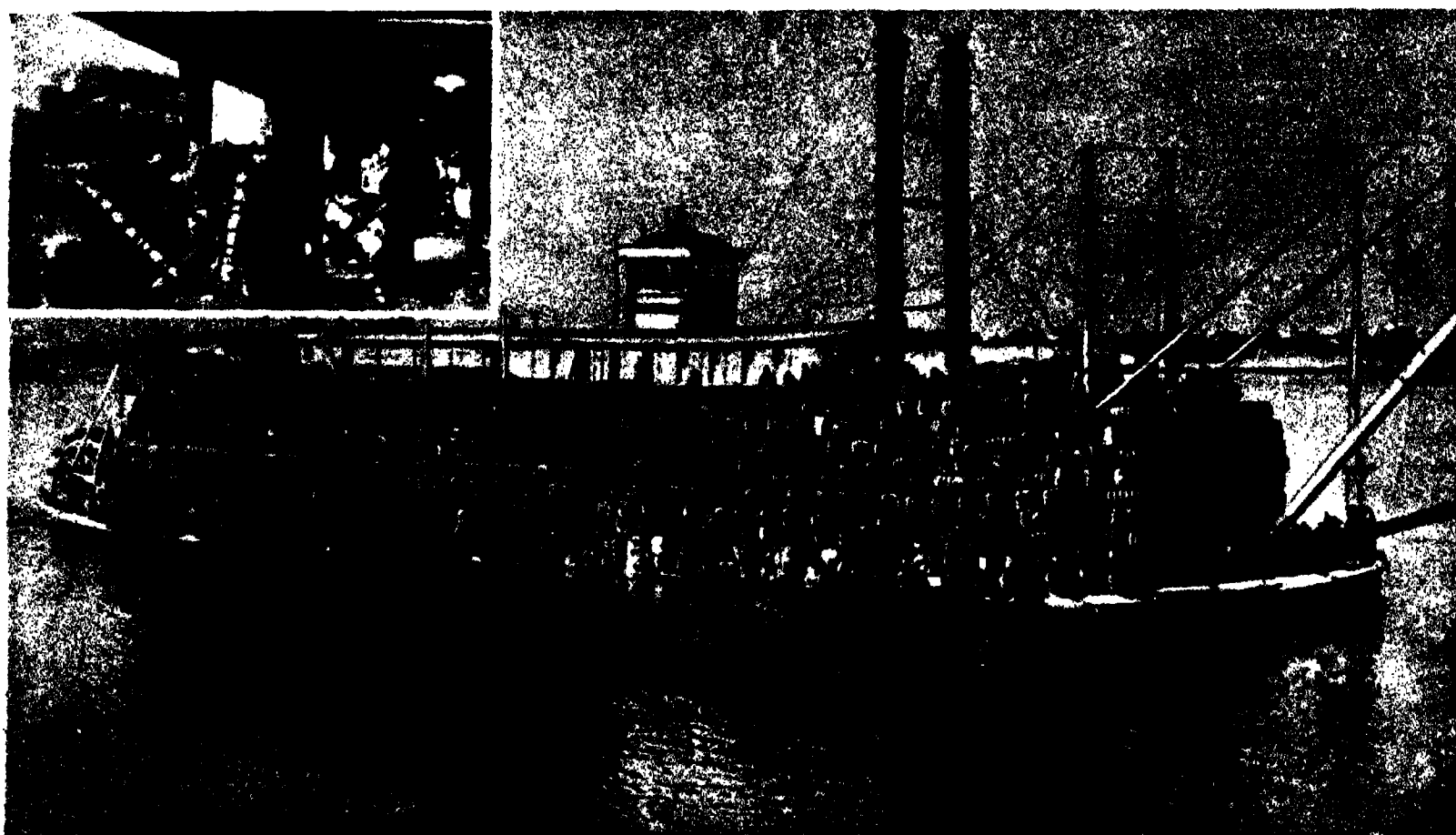
Courtesy, Courtaulds, Ltd.



E.N.A.

COTTON PICKIN' AT HARVEST TIME IN TENNESSEE

Cotton clothes most of the world and most of the world's cotton comes from the U.S.A. The huge harvest must be gathered by hand, and, as you might gather from the popular songs, most of the cotton pickers are negroes. Cotton is a white flower.



E.N.A.

A HEAVY CARGO ON THE MISSISSIPPI

It is difficult to imagine how this stern wheeler can float with its immense load. The bales are full of cotton freed from its tiny seeds and ready for export when they reach the docks at the river mouth. Inset : Bales arriving at the docks in Manchester, the centre of the cotton industry in Great Britain. The damp Lancashire climate is admirable for cotton spinning.

COTTON

WHAT MAN WEARS



Stephenson

A CLEAN-UP AFTER THE JOURNEY

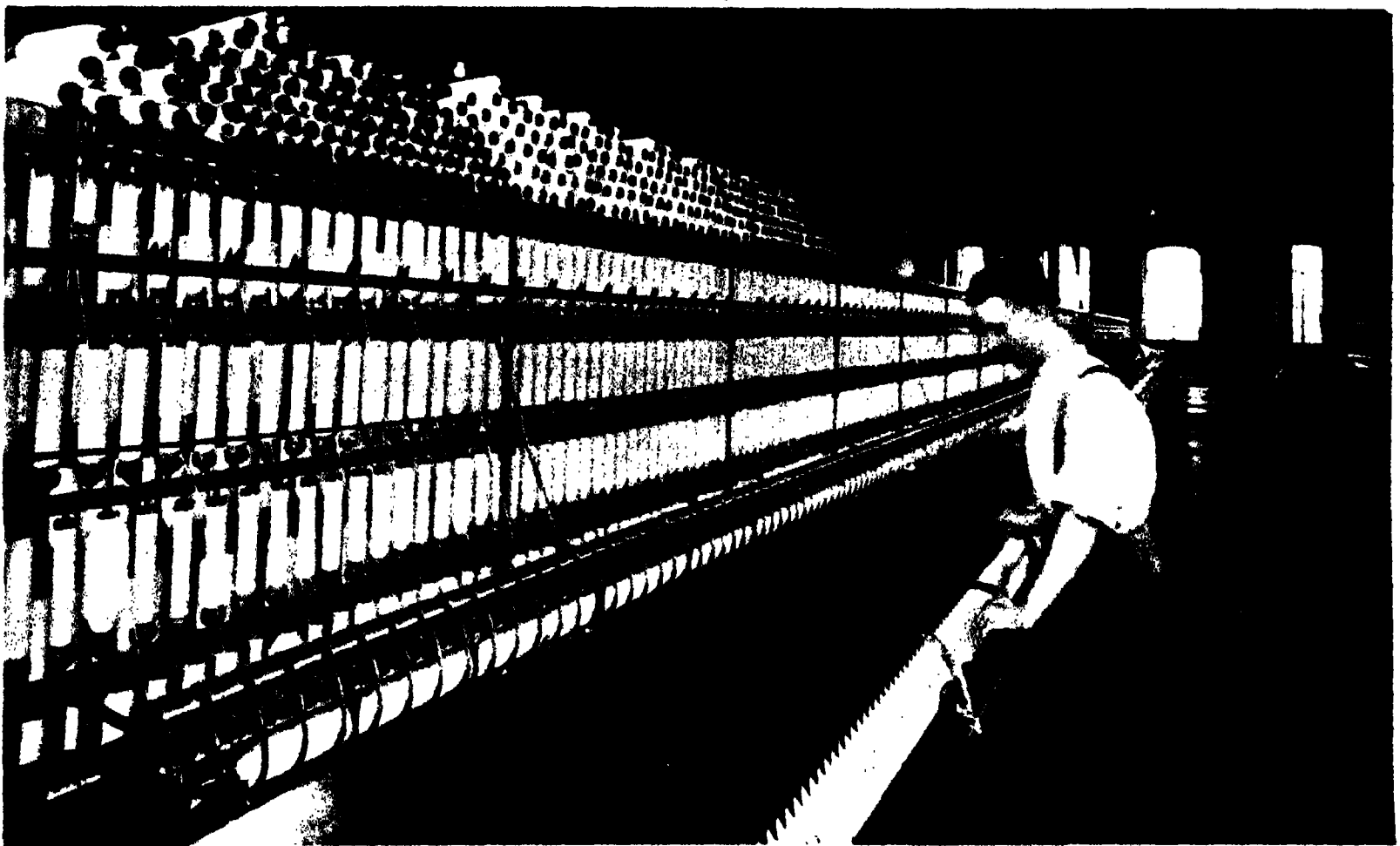
When the lightly pressed bales arrive at the factory they are opened and the compressed fibres are loosened. All dirt is removed by a special machine which fans away dust and other debris. The thoroughly cleansed raw material is then ready for the first of many varying operations.



Stephenson

NEARING ITS FINAL PROCESS

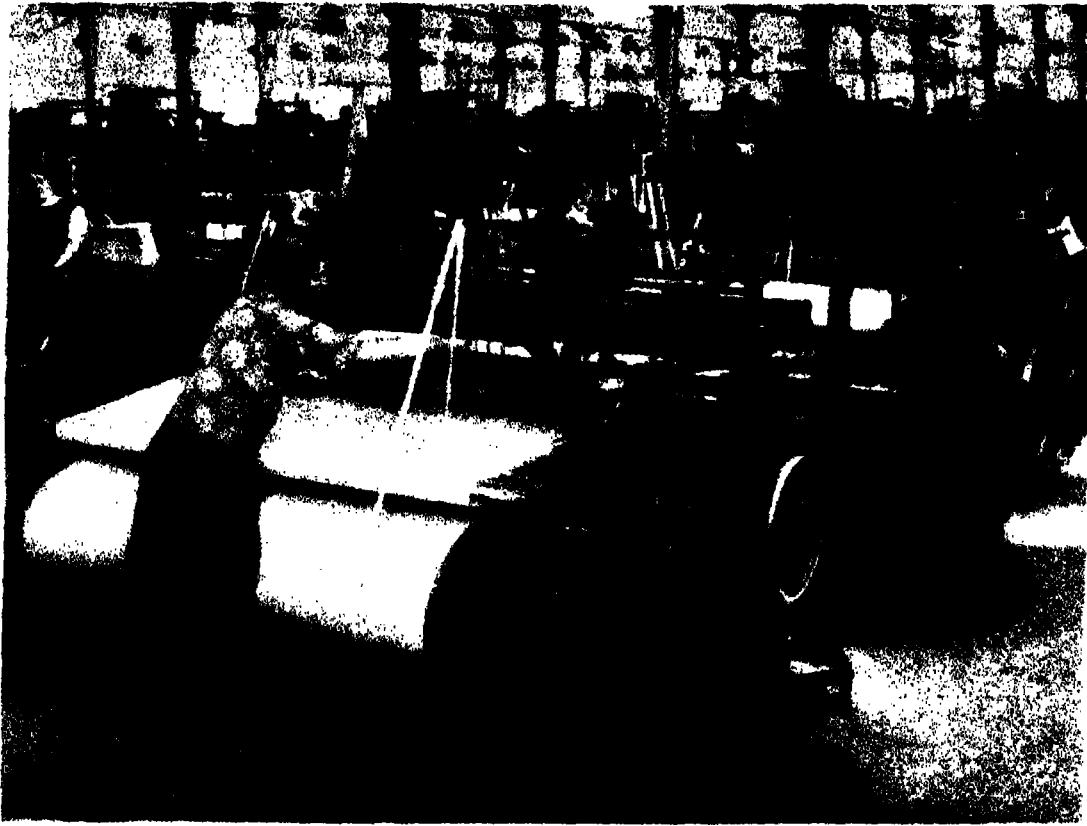
After the tangled fibres have been combed they are divided into loose narrow strips which are passed through grooves in the steel rollers of the drawing machine, and emerge as soft hollow ropes. Other similar but decreasing gauge machines repeat the process until a fine soft twine is obtained.



Stephenson

INTRICATE OBEDIENT MACHINES

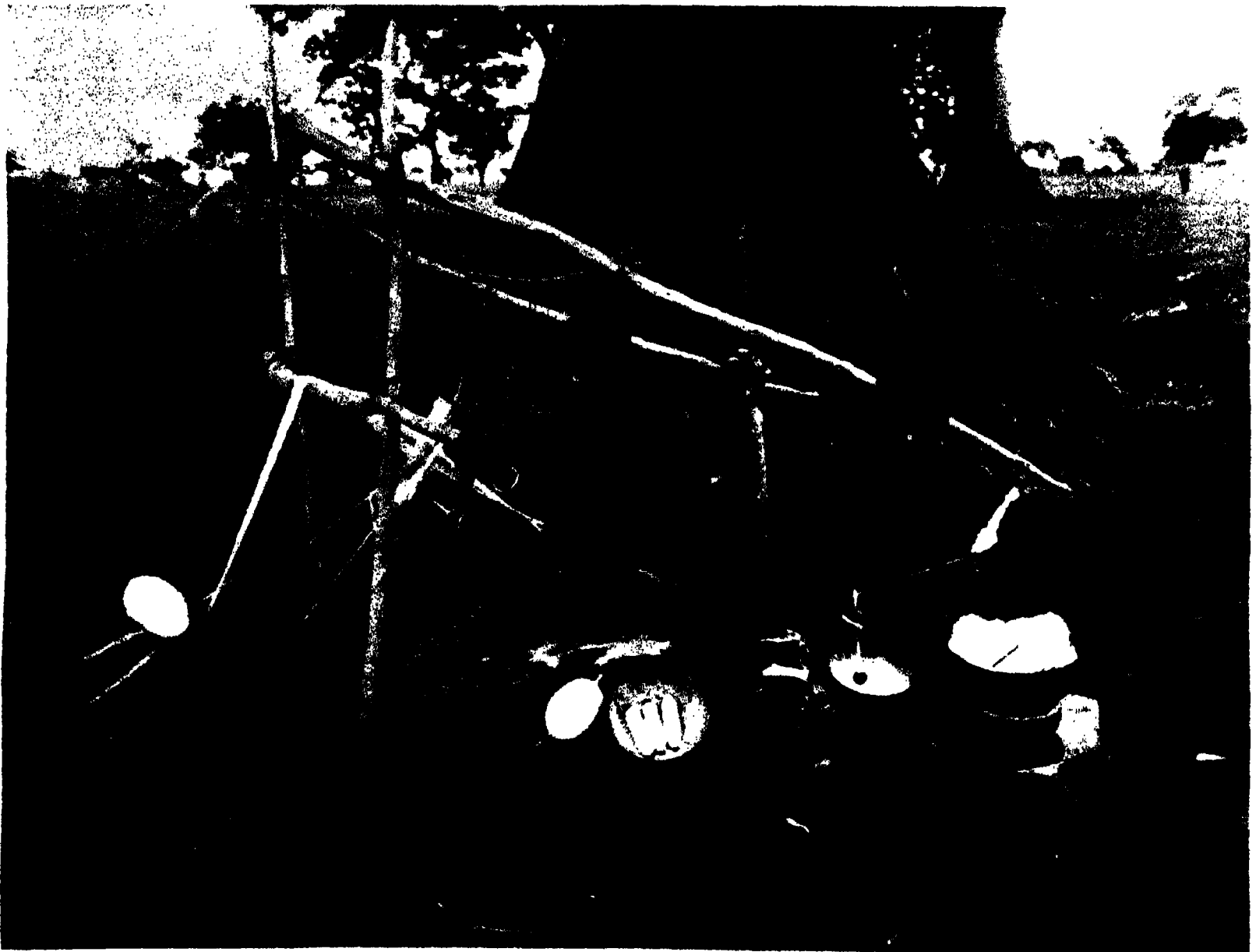
In a modern factory the soft twine is spun into yarn entirely by machinery. The spinning mule draws out and twists many strands at once and then winds them on to spindles. Such machines as these have displaced much hand labour.



Stephenson

A MACHINE THAT ALMOST WORKS BY ITSELF

The modern power loom that does the weaving is so perfect that human intelligence is almost unnecessary in plain weaving. The long threads, the warp, are arranged parallel on the loom. Special devices automatically supply the yarn for the cross threads or weft. The shuttle, working automatically, carries the weft under the even threads and returns over them, merely copying what man has done by hand for ages.



A SOMEWHAT SIMPLER METHOD !

Hand spinning and weaving by two West African negroes. The woman is spinning the fibres into yarn by means of a piece of wood weighted at the bottom to balance it. The distaff is just a forked twig. Notice how the man works the weft with his toes and what a narrow strip the finished work will be. The use of feet as extra hands is common amongst natives.



Courtesy, Old Bleach Linen Co.

BLUE FLOWER TO BEDSPREAD

Linen, the housewife's pride, begins as the blue flowered flax plant which is pulled up by the roots when it is ripe about the beginning of August. The chief home of this important industry is Ulster, in the north-east of Ireland.



Courtesy, Old Bleach Linen Co.

RETTING FLAX IS ROTTING FLAX

Bundles of flax are placed upright in water so that the soft parts may rot away and the tough fibres become loosened. This is known as steeping or retting. The fibres or stalks are then either dried in bundles or spread out on the grass.



Courtesy, Old Bleach Linen Co.

A STRANGE HARVEST FIELD

Here are the bundles of retted flax stacked in a field to dry. Sometimes when the weather is good they are spread out on the grass. The flax is next passed between heavy rollers to break up the core of the stem, leaving soft, silky fibres of linen.



Courtesy, Old Bleach Linen Co.

THE FINAL GLORY ADDED BY THE SUN

After the cloth has been manufactured in the mills it is spread out on wide lawns where the sun and the wind help to remove the natural brown colour and to turn the linen white. Then the linen goes back indoors for final bleaching.

GLOVES



Courtesy, Messrs. Dent

GLOVES IN THE MAKING

The most durable gloves are of skin or leather. In this picture skins which have been stained are being dried.

WHAT MAN WEARS



Courtesy, Messrs. Dent

STAMPING THOUSANDS OF GLOVES

When the skins have been trimmed to the desired size they are placed on a cutter and punched into the correct shape.



Courtesy, Messrs. Dent

THE HUMAN TOUCH

Glove-making still remains a highly skilled occupation, and gloves of the very highest quality are all sewn by hand.



Courtesy, Messrs. Dent

THE CRAFTSMAN'S SKILL

But about fifty years ago a machine was invented for sewing gloves, and most of them are now machine made.

WHAT MAN WEARS



Manfield & Sons

BOOTS AND SHOES

(Left)

THE BEGINNINGS OF A BOOT

In the top right-hand corner are stores of all kinds of skins from all parts of the world. The rest of the illustration shows the "clicking" department where with knife, cutting board and pattern the clicker carries out the ideas of the designer of the shoe. Linings and inside fittings are produced in the same department.

(Bottom)

STITCHING SHOES

The various parts next reach the closing room where they are joined together. The two top pictures show leather being stitched by electrically worked sewing machines, the two bottom ones the making of eyelets and button-holes. Women are employed in these processes.



Manfield & Sons



Manfield & Sons

(Top)

CUTTING SOLES

The soles are cut from the hides of full grown cattle by power presses fitted with specially shaped knives. Changes in fashions are not so frequent as in clothes, but machines must be adaptable enough to follow the varying mode.

(Right)

FINISHING OFF

With skilful hands the craftsman puts the finishing touches. The boots and shoes are then stained and are ready for wear. *Inset :* Examining the finished product, which has been through many processes before being completed.





E.N.A.

PANAMA HATS DON'T ALWAYS COME FROM PANAMA

This picture shows a party of young girls of Porto Rico using another common material for hats—straw. In the finest grade straw hats, the panama, the straw is plaited and woven by hand. Panama hats are mostly worn in South America.



E.N.A.

A PLAGUE OF RABBITS HAS ITS USES

Rabbits are the curse of Australia, where they have multiplied to an enormous extent. But as the best felt hats are made of pure rabbit fur, and even the cheaper kinds are made of a mixture of fur and wool, a great deal of it comes from Australia. Here you see a rabbit "drive" in progress, during which countless thousands of these creatures will be slaughtered wholesale.



Courtesy, Christy & Co., Ltd.

PRODUCING A HAT FROM A RABBIT

The first process in making a hat is called "fur forming." The soft fur is blown by air on to a metal cone. The picture shows the "forms" being stripped from the metal cones.



Courtesy, Christy & Co., Ltd.

THE HAT BEGINS TO TAKE SHAPE

The next process is hardening the felt. The odd-looking felt cones that you can see on the left of the picture are blocked into shape according to the prevailing fashion of the day.



Courtesy, Christy & Co., Ltd.

FINISHING TOUCHES

After "blocking," the surface of the hat is "finished" by the application of very fine sandpaper applied while the hats are revolving on a special finishing machine at a high speed.



Courtesy, Christy & Co., Ltd.

AN IMPORTANT ADDITION

Part of the trimming is put on by machine and part by hand. In the left of the picture the hats are covered with tissue paper caps to keep them clean, since they quickly soil.

WHAT MAN WEARS



Courtesy, South African Railways

A FASHION FOR ALL TIMES AND CLIMES

Decorative jewellery is popular in its various forms all over the world. These Zulu sisters rejoice in both beads and metal bands and wear them with a grace and charm equal to that of their white sisters. Hair dressing also receives careful attention.



E.N.A.

FOREIGN FASHIONS MAY GIVE STRANGE EFFECTS

The spread of European fashion is well illustrated in this picture of a negro bride and bridegroom with their attendant bridesmaids and curious crowd, taken immediately after their wedding in the streets of Stan Creek, British Honduras.



E.N.A.

SOME DAY IS WASHING DAY ALL THE WORLD OVER

But keeping clothes clean, in the absence of properly equipped laundries, is sometimes a difficult matter. In many parts of Europe, clothes are spread on a board and beaten with a wooden flail. This is a common sight in many Swedish villages.

WHAT MAN WEARS



E.N.A.

EVERY HOUSEWIFE HAS HER DIFFICULTIES

Lack of suitable "drying ground" is clearly indicated in this photograph taken in the old quarter of Genoa. The inhabitants of these narrow streets have made the best possible use of the only fresh air available for their weekly washing day.

NATIONAL COSTUMES

WHAT MAN WEARS



CHILDREN OF HOLLAND WEARING CLOGS

G.P.A.



A SLAV WOMAN

G.P.A.



GREEKS WEARING THEIR NATIONAL KILTS

G.P.A.



A HUNGARIAN MOTHER AND CHILD

G.P.A.

WHAT MAN WEARS



G.P.A.

TWO "BEAUX" OF ALBANIA



G.P.A.

A SPANISH MOTHER AND HER CHILDREN

NATIONAL COSTUMES



G.P.A.

A RUMANIAN PEASANT GIRL



G.P.A.

AN ALPINE GUIDE

HOW MAN SHELTERS HIMSELF

WE have discussed man's primal necessity—food. The second human necessity is shelter, for protection from sun, rain, wind or snow, or from wild animals and, at times, from human enemies. The need for shelter is far more widely spread than that for clothes, which in a sense are, however, merely a kind of house, more or less fitted to the human body. There are many people who wear little or no clothing: there are none who do not know the use of some kind of shelter, though the South African bushman, in the absence of a cave or other refuge, will sometimes sleep in a hollow scooped in the ground.

The dominant idea, in the beginning, is always that of protection. There is, in early stages of human history, no thought whatever of isolation for purposes of privacy, and certainly no idea of beauty or ornament in the construction of the primitive shelter.

The homes of different peoples living in our own time are sufficiently varied to show us all the stages through which the development of the house has progressed towards greater security and comfort. We still have with us men who live in caves, under projecting rocks, in mere wind breaks, and in almost every conceivable kind of hut.

Pit Dwellings and Holes in the Earth

The first homes in the fashioning of which the human hand played any great part were, probably, pit-dwellings—mere holes dug in the earth. These would be followed by simple huts which, as the farmers settled down to a more regular existence, were converted into more substantial houses. Building, like all the domestic arts, began with farming.

The character of the house, as the pictures will show, reveals the influence of many factors. It was built and, in the greater part of the earth, is still built of local material that varies from grass to wood and stone. The wood house is, as a matter of fact, still characteristic of all forested regions, and this holds good even where a high stage of civilisation has been reached.

Dwellings of Brick and Stone

With the use of brick and stone came the beginning of true architecture, building in a

nobler sense, with the idea of giving beauty and proportion, especially to the houses of the gods. It is interesting to note how the old influences persisted even when new and improved methods of construction were introduced. Wood, for instance, has given way to stone, for the sake of durability, in many places where stone is easily obtained. But many of the features of old wooden buildings have been imitated in the stone and so preserve for us, in a fossilised fashion, the more primitive methods dictated by local opportunity.

The flutings on a Greek column, are stone copies of the bundles of reeds that formed the door posts of the hut of an Egyptian peasant. The width of the nave of an early English cathedral is no more than the length of the longest tree trunk that could be found in the forest to tie the walls together. The square end of many a church is a reminder that it was easier to build square, rather than round ends when wood was the material used. And so on with other materials.

The Climate as Architect

The particular climate and environment in which the house is erected are responsible for much variation in many of the details. In the south of Europe, for instance, the sunlight and heat are intense and the problem that faces the southern architect is how to tame the light and bring it into subjection. The chief thing a southern building needs is shade, not light. In the north, on the contrary, the chief climatic factors to be taken into account are rain and snow, which affect, particularly, the shape of the roof (see illustrations) and the feebleness of the light which is responsible for the size of the windows.

In these days houses and large buildings seem to be taking on new forms, but striking as they are, they have really given us nothing that is absolutely new. It is probable that all the possible basic patterns in architecture have been exhausted. Even the most extraordinary of modern buildings can do no more than recombine the different forms of arch and wall that have been known for centuries.

Nothing can have a more powerful effect upon the life of human beings than the material

HOW MAN SHELTERS HIMSELF

conditions in which they live, and yet the greater part of the population of the world is inadequately housed. Even the nations that consider themselves most advanced have been content to allow their rural population to dwell in houses that are little better than those of the primitive peoples, while the urban population is, to the number of many millions, herded in ramshackle and insanitary tenements. As long as so large a part of the population of any country is condemned to live in overcrowded health-destroying conditions, that country may be said to have failed to solve the social problem of living together and cannot claim, in the evolution of culture, to be more than semi-civilised.

Service Flats and Communal Houses

In recent years a very important change has taken place in the attitude of certain classes, both rich and poor, towards the question of living in comparative isolation. In England, the statement that an "Englishman's home is his castle" was a national slogan and the richer a man became the

greater was his tendency to separate himself by garden, field or park from his neighbours. Detached and semi-detached houses expressed social ideals. The modern tendency is to live in a many-storied flat, where, by means of labour-saving devices and central services, the routine of housekeeping is rendered easier and simpler.

On the Continent of Europe, particularly in Russia, this tendency has gone further still, and has given rise to large communal houses, especially in connection with large factories. In some of the houses there is no provision for family life. The inhabitants take their meals in a communal restaurant, amuse themselves in the club-room that is at the service of all of them, and, for part of the day at any rate, hand over their babies to the crèche and their young children to the kindergarten that form an integral part of the settlement. The waste heat from the electricity generating station heats a large supply of continuously hot water, which is conveyed to the flats by underground pipes and is conveniently available at all times for every domestic purpose.

ERNEST YOUNG, B.Sc.



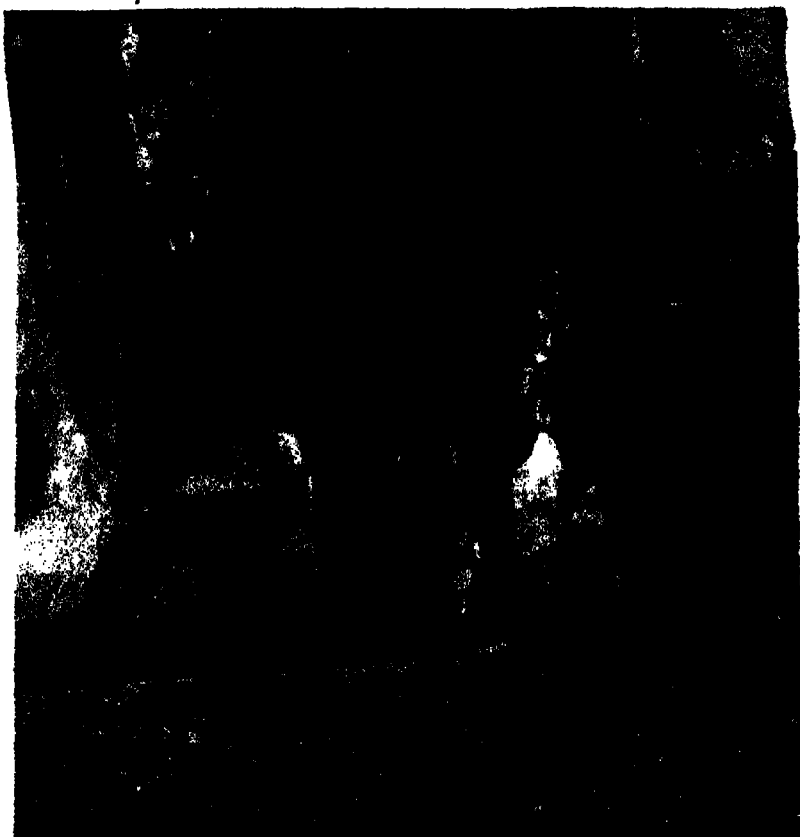
HOW MAN FIRST BEGAN TO SETTLE

Canadian Pacific Railway

THE MOST PRIMITIVE HOMES IN THE WORLD

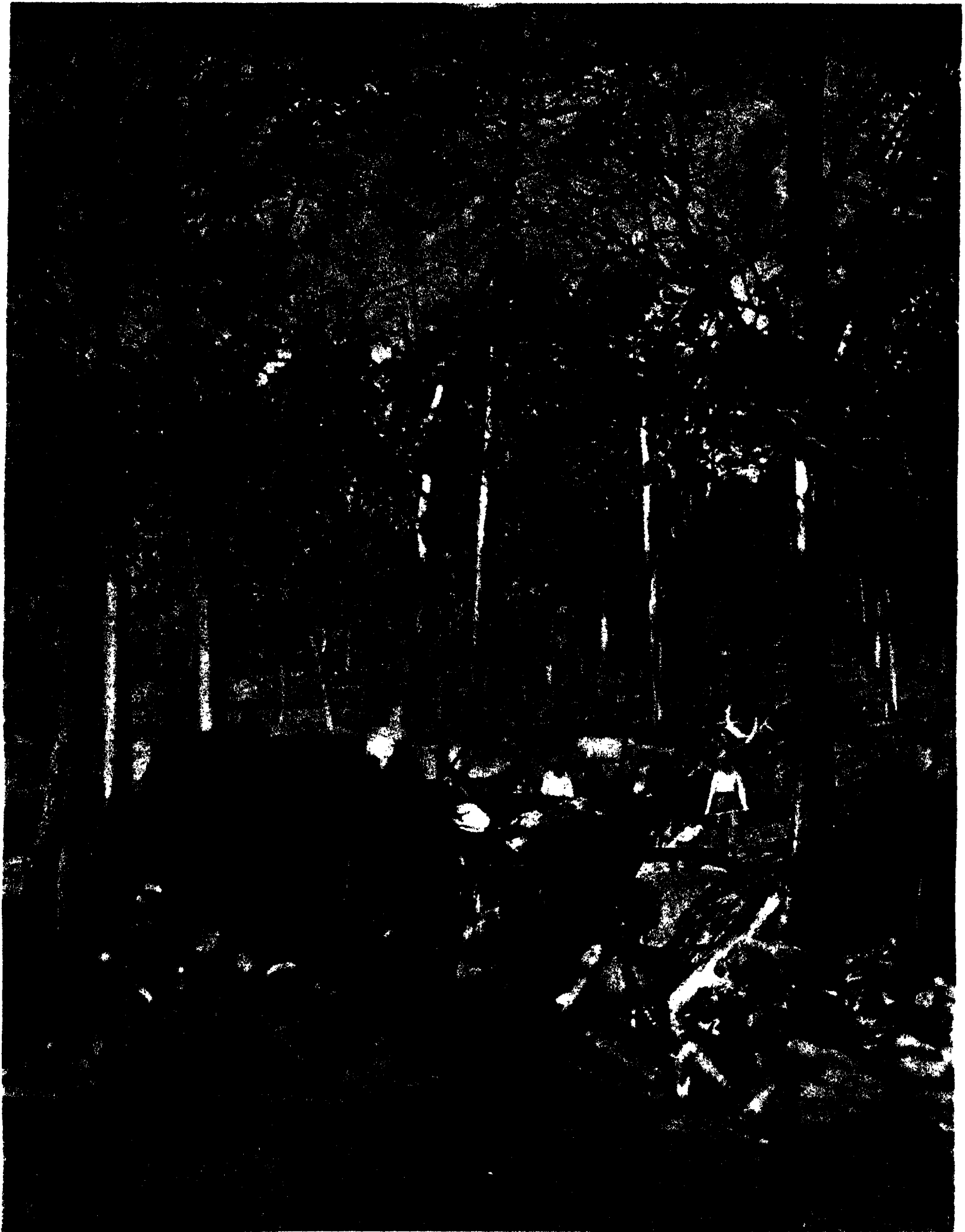
Our earliest ancestors knew nothing of house building. They slept shivering in the open or to leeward of a projecting rock or tree trunk, and thought themselves lucky if they could find an empty cave. Here is a family of Veddas in Ceylon—one of the most primitive races alive to-day—who still prefer the discomfort of a cave or shallow rock shelter as we see here. It is doubtful whether the Veddas can resist the ever-advancing inroads of civilisation.

E.N.A.



MODERN CAVE DWELLERS IN FRANCE

At Dieppe, on the French side of the Channel, there are people who still live in caves. But they have at least widened and enlarged these holes in the chalky cliff and built windows and doors to protect themselves from the chill sea winds or unfavourable weather.



HOUSES WITH ONLY ONE WALL

E.N.A.

The Australian native weaves a screen of leaves and bark and rushes, or wood and turf. This flimsy affair, propped on a couple of uprights, is the only kind of home he knows how to construct. The photograph shows a hunting party of the few remaining aborigines posing in front of a series of "wind-breaks," as they are called, in a clearing in the bush.

HOUSES ON STILTS

HOW MAN SHELTERS HIMSELF



SAFETY FIRST IN NEW GUINEA

R.P.N. Co.

This native village has been built on the water well out of reach of wild animals or human enemies, and can only be reached by boat. The inset shows a Papuan lake-village with a platform which is the only place where the natives can keep their goats, poultry, and children. The desire for safety is the determining factor in these two types of dwelling.



A PETER PAN HOUSE FOR UNMARRIED WOMEN

E.N.A.

Here is another queer home from New Guinea. Houses are built in the tree-tops for the unmarried women of the tribe. They are reached by long ladders and contains heaps of stones piled near the door to discourage any unwelcome visitors.



E.N.A.

A SHELTER ON THE DESOLATE STEPPES

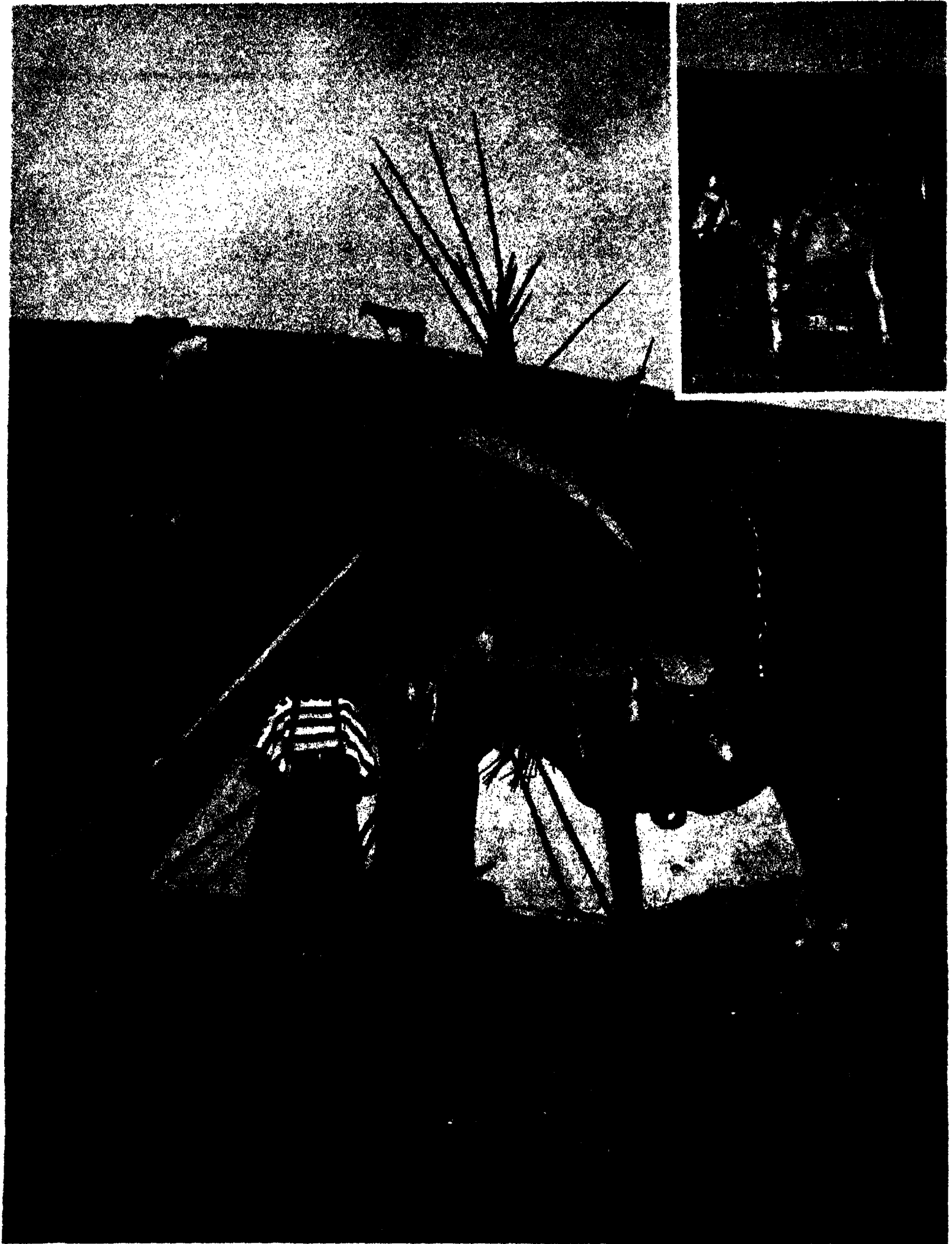
In Russian Turkestan the steppe extends for mile after lonely mile. Only a few small Kirghiz tribes herd their flocks upon it. Their house is a tent of felt from the wool of the beasts they tend spread on an easily carried wooden lattice.



E.N.A.

A BEDOUIN ENCAMPMENT

The Bedouin's camels will carry his house for him in his wanderings across the desert. It is therefore a much more cumbersome affair and contains more furniture than the one in the top picture. The camels also provide hair for the tents.



THE WIGWAM OF A DYING RACE

Courtesy of "Canada."

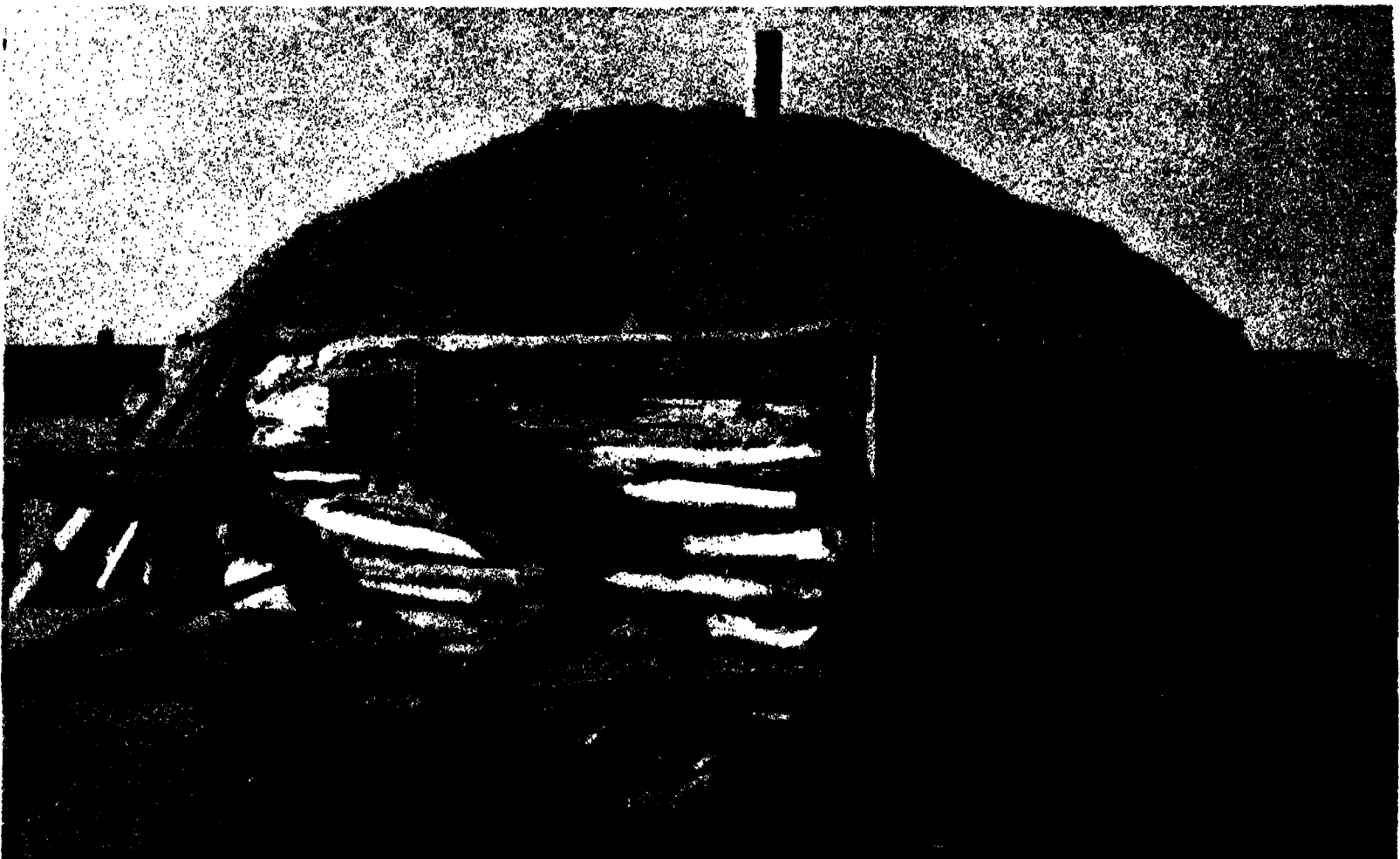
The Red Indians of North America still use the type of tent their forefathers made. The skeleton in the *inset* shows you how the poles are arranged with their ends in a circle tied together at the top, upon which the skins are spread taut.



Courtesy, Norwegian State Railways

THE FIRST CRUDE DWELLINGS MADE BY MAN

The efforts of our clever ancestor who first thought of building a hut must have looked like this one in Lapland. This represents the crude headquarters for the reindeer herdsman who often lives all the year round in a tent. Inside it is warm and cosy, but lack of proper ventilation must make it very stuffy at times. This hut is a primitive permanent settlement.



ARCHITECTURE TAKES A STEP FORWARD

Beside the Laplander's hut this "hogan" of the Navajo Indians of New Mexico seems a considerable step forward in the knowledge of building. But these round, single-roomed huts are so easily built that they are deserted without regrets.



E.N.A.

THE WARM BUT ICY WINTER QUARTERS OF THE ESKIMO

These round Eskimo huts or igloos are made entirely of blocks of snow and ice, and, of course, are only used in the winter time when the extreme cold prevents them from melting. They are much less common than they used to be; in fact, it is said that many Eskimo children have only seen pictures of them in books supplied by the missionaries, or other sources.



E.N.A.

A BEAUTIFUL HOUSE IN TWELVE HOURS

Two Zulu men can run up a "kraal" like this one in one working day of twelve hours. Here you see the half completed framework of pointed, interwoven laths. Over this is placed a layer of grass and reeds and mud to make it weatherproof.

HUTS

HOW MAN SHELTERS HIMSELF

A MANSION FROM THE LAND OF SUGAR CANE

The huts of the West Indian negroes are primitive enough, but they differ from the others we have seen up till now—they have square corners. You may still trace the woven laths and grass-and-palm-leaf-roof style of building that these Jamaicans inherit from their African ancestors. Tradition often dies slowly and can be traced, not only in housing but in the food and clothing, of the inhabitants of many parts of the world.



Courtesy, West India Committee

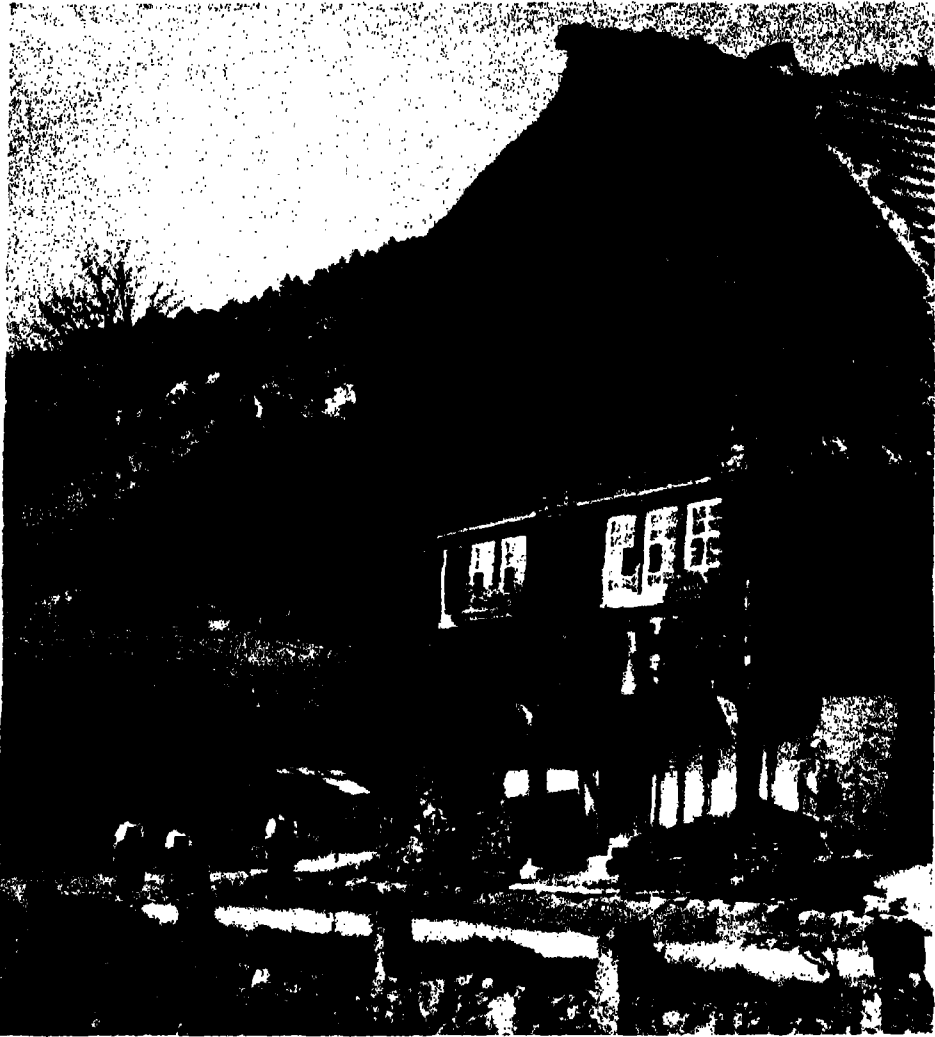


Courtesy, Canadian National Railway

THE PIONEER'S LOG-CABIN—A WHITE MAN'S HUT

This rough and ready structure is not very far removed from the hut of primitive man. The illustration is typical of the homes built by pioneers in Canada and Australia. It is made of roughly hewn logs and roofed with wooden slats. The chinks between the logs are plugged with earth or plaster to keep out rain and cold. They are comfortable when well built.

HOW MAN SHELTERS HIMSELF



Courtesy, German Railways

BUILDING MATERIALS

THE FAIRY-TALE HOUSES OF THE BLACK FOREST

Hansel and Gretel probably lived in a house like this. The very finest kind of wooden buildings are to be found, naturally enough, where wood is plentiful, i.e., in the forest district of Germany, Switzerland, and Sweden. This particular one is half thatched and half tiled, and sometimes even corrugated iron is used nowadays as additional variation of roofing material.

TROPICAL HOMES OF WOOD AND STRAW

On the Island of Nias, Sumatra, the houses are built on piles and roofed with thatch. These are real houses with separate rooms, and, as you see, an attic window complete with sun-blind. Such a house represents a decided advance from the early mud huts



Courtesy, Nederlandsch Foto-Bureau.



E.N.A.

ISRAEL IN EGYPT MADE BRICKS LIKE THESE

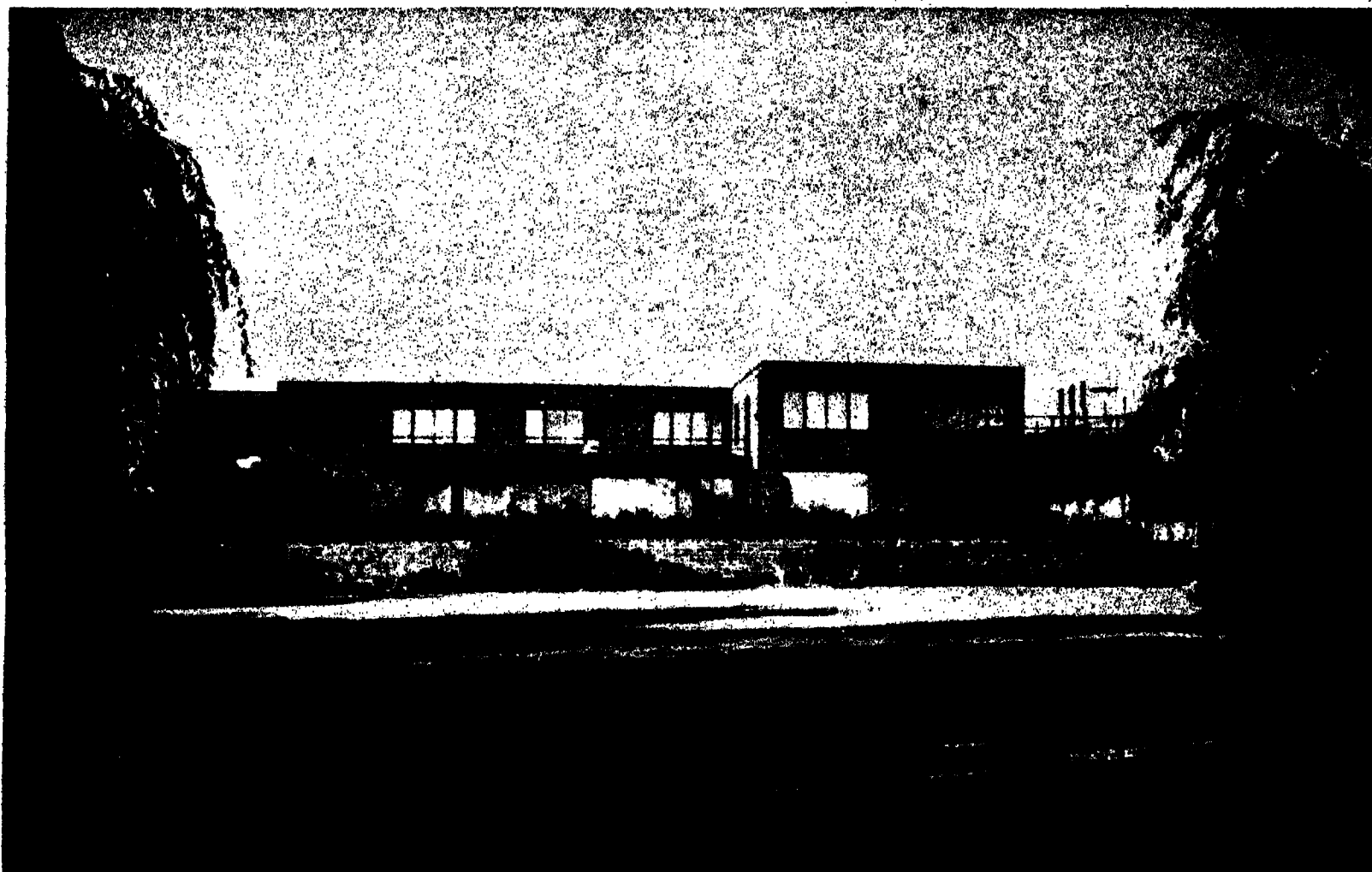
In Nefta, Tunis, you may see these houses built entirely of clay bricks dried in a fire or simply by the sun. The clay brick is one of our oldest building materials, but the unbaked kind can only be used in a hot country. Imagine the effect of an English summer on a house of dry mud! The flatness of the roof clearly indicates a lack of rain in these parts.



E.N.A.

BUT THE NEW MEXICAN INDIANS USE STRAW WITH THEIR BRICKS!

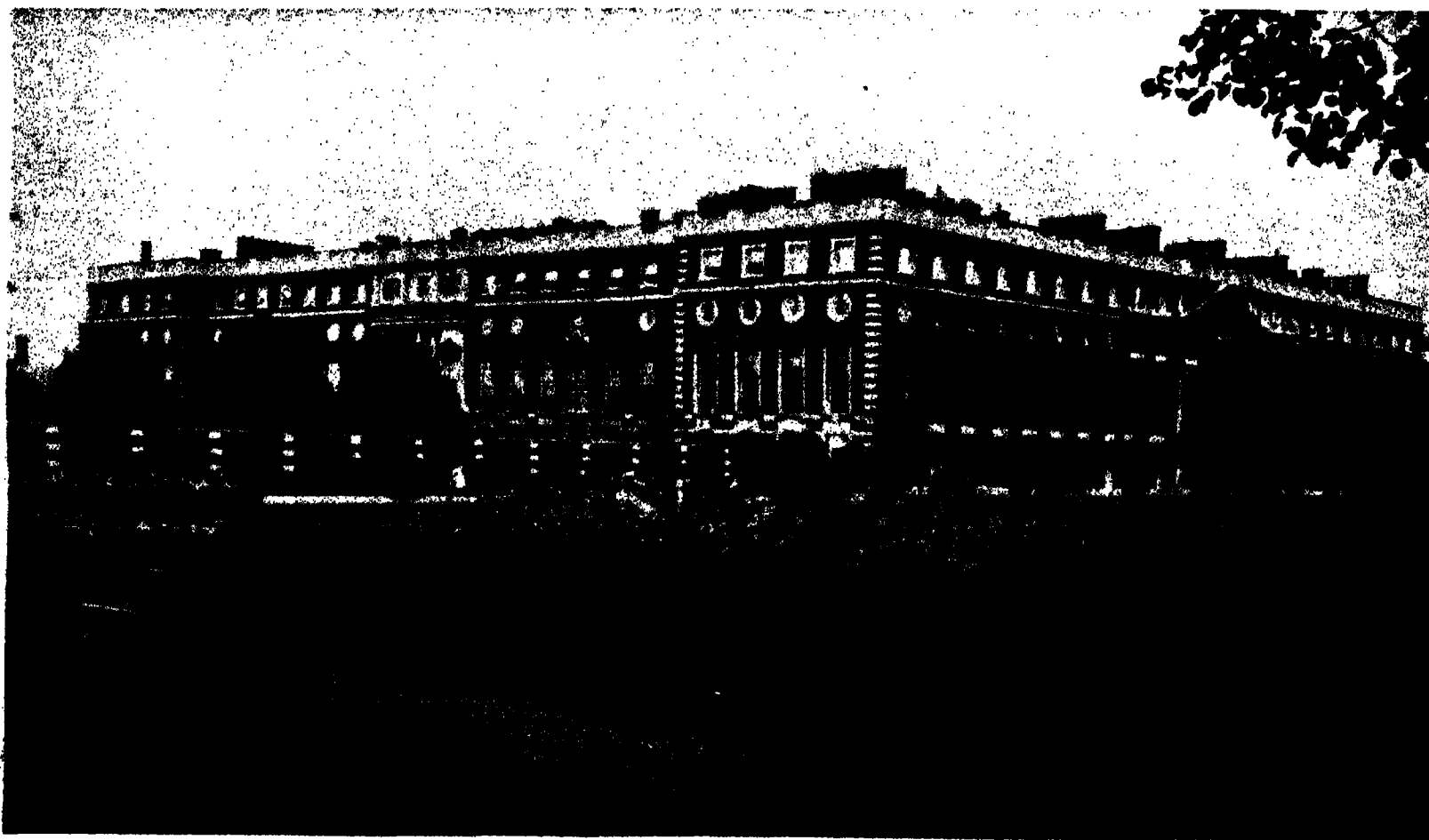
The group of houses at Taos are built of small logs and branches plastered with a mixture of straw and clay called "adobe." The photograph shows what is really a set of "flats," inhabited by different families who live on their different terrace-levels quite independently. The round objects at the right are clay-baking ovens. Inset: Bricks of "adobe," ready for use.



HOW ARCHITECTS USE BRICKS TO-DAY

Courtesy, German State Rlys.

The artistic use of bricks is well illustrated in this modern dwelling-house at Krefeld in Germany. The amount of space devoted to windows is a modern tendency in house construction, following the realisation of the benefits of sunlight to health:



A BEAUTIFUL PALACE OF BRICK AND STONE

Hampton Court is an example of the fine effect obtained from the use of bricks with stone. The Palace was originally built by Cardinal Wolsey for his own use, but was so much admired by Henry VIII that he took it from his fallen minister.



Courtesy, G.W.R.

OLD ENGLISH HOUSES MADE OF NATIVE STONE

Where wood is scarce stone will always take its place, and if it splits easily even the roof may be of stone, as can be seen in this view of a Worcestershire village. The sloping roof, although picturesque, is really designed to carry off rain.



Courtesy, G.W.R.

THE RUGGED ROCKS OF CORNWALL

Cornish granite has been used to build this picturesque village of Sennen Cove. Too hard to do much with, it is used in large blocks, the stern severity of which not even whitewash can conceal. The roofs in this case are thatched or slated.



HOUSES WITH GENTLY SLOPING ROOFS
AT SOLLER, IN MAJORCA



Courtesy, C.P.R.

FLAT-ROOFED HOUSES AT
TIBERIAS, SEA OF GALLILEE



A STEEP-ROOFED HOUSE AT
ALUM IN GERMANY

A study of roofs can be most fascinating since, in most cases, they have been designed to meet varying weather conditions. In dry regions, as at Tiberias, on the Sea of Galilee, in Palestine, where rain rarely falls, the roof is flat; in regions with rain, but little or no snow, the roof slopes gently to shed the moisture; but in regions further north where there is snow as well as rain, the pitch of the roof is considerably increased in order that the heavy burden may slide away as quickly as possible and do no damage.



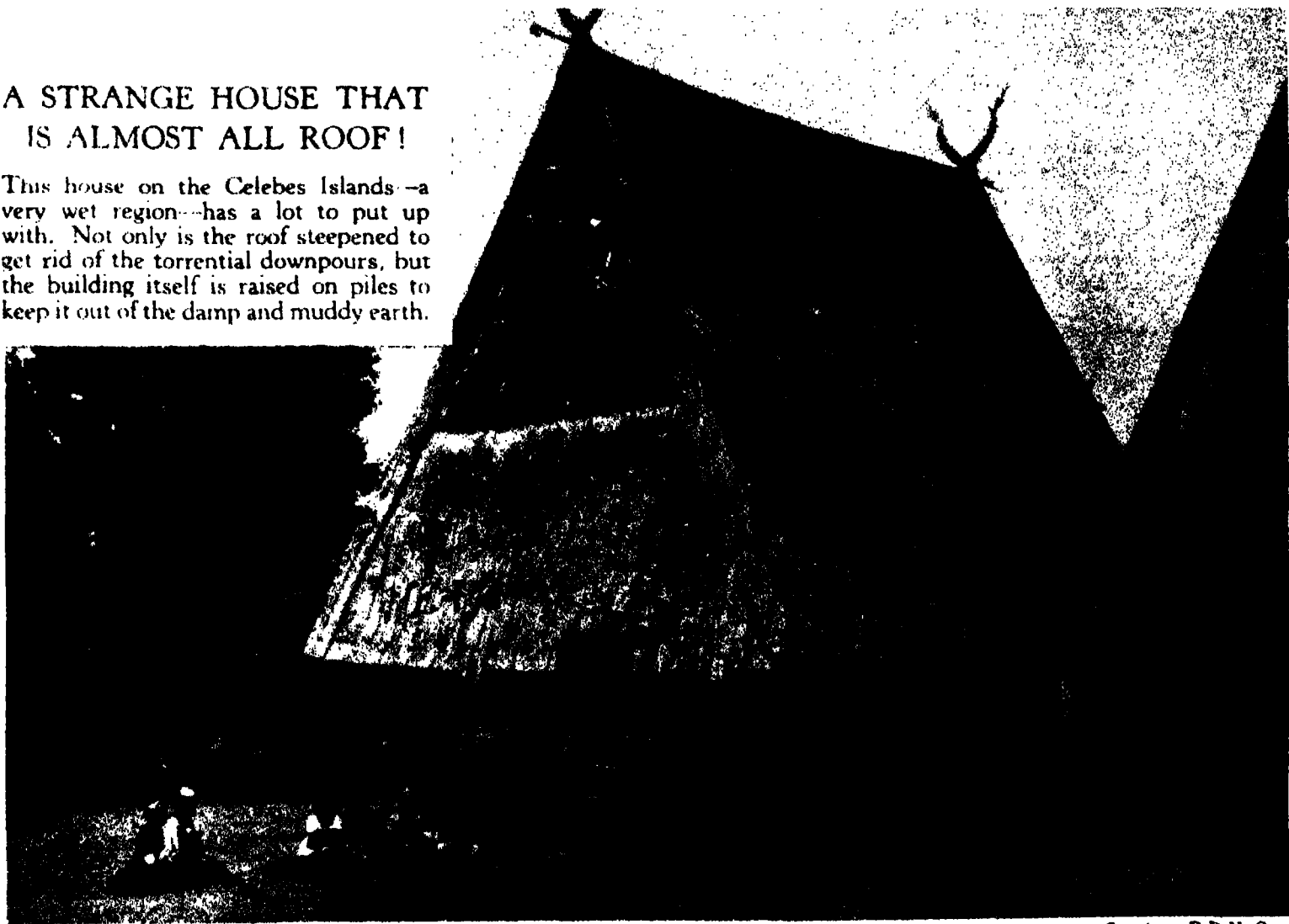
E.N.A.

THE DOUBLE DUTY OF A ROOF IN SWITZERLAND

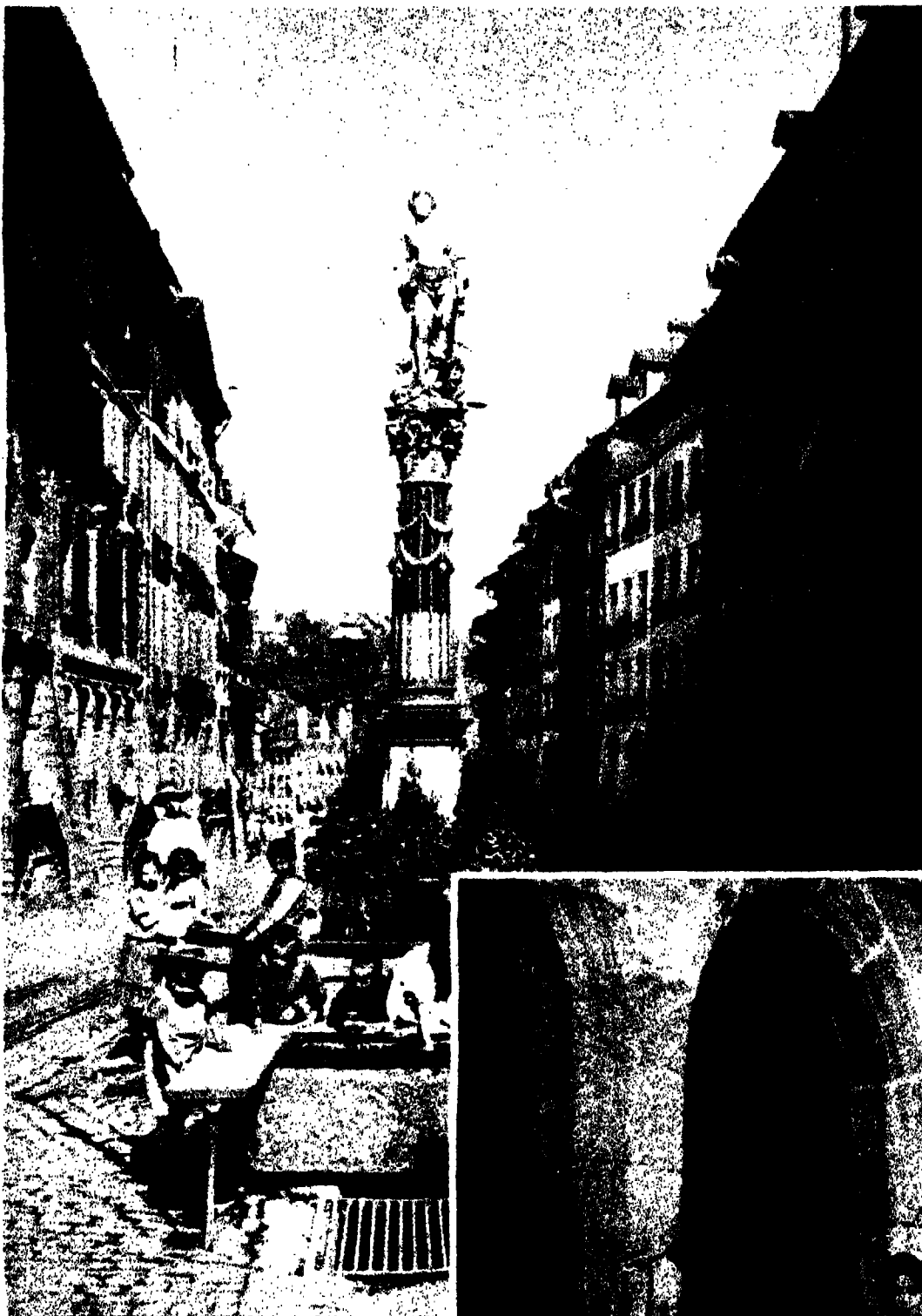
In Switzerland the house is a response both to snow and wind. The roof is kept flatter than we should expect, in order first that the snow may lie on it and form a kind of warm blanket, and secondly to withstand the winter gales. The stones on the roof are a part of the builder's reply to the attempt of the wind to blow it away. The lid over the chimney can be pulled down from the inside to keep out rain or snow, and the entrance to the house is placed some feet above the ground.

A STRANGE HOUSE THAT IS ALMOST ALL ROOF!

This house on the Celebes Islands—a very wet region—has a lot to put up with. Not only is the roof steepened to get rid of the torrential downpours, but the building itself is raised on piles to keep it out of the damp and muddy earth.



Courtesy, R.P.N. Co.



(Left)
A STREET
IN BERNE,
SWITZERLAND

(Bottom)
A FISH
MARKET
AT VIGO,
PORTUGAL



*Courtesy, J. Forstein and
Swiss Federal Railways*

STREETS PROTECTED AGAINST COLD AND HEAT

Arcades in streets are due to the need for protection from the weather. In the north, as in Berne, they make shopping possible when the winter snow falls; in the south, as at Vigo, they offer a refuge from the heat of the midday sun.



WINDOWS

HOW MAN SHELTERS HIMSELF

THE WHY AND WHEREFORE OF WINDOWS

Windows all over the world depend on the sun. Where there is too much, there may be no windows at all—as in the case of this Kaffir kraal, where semi-darkness means coolness ; but where there is hardly enough, windows should be large and many, as in this beautiful modern house at Amersham, which has been planned to get as much sunlight as possible. Most pre-Twentieth Century houses were built without much thought to their proper position with regard to sunlight, prevailing winds, etc.



S.A. Railways

A KAFFIR KRAAL IN NATAL



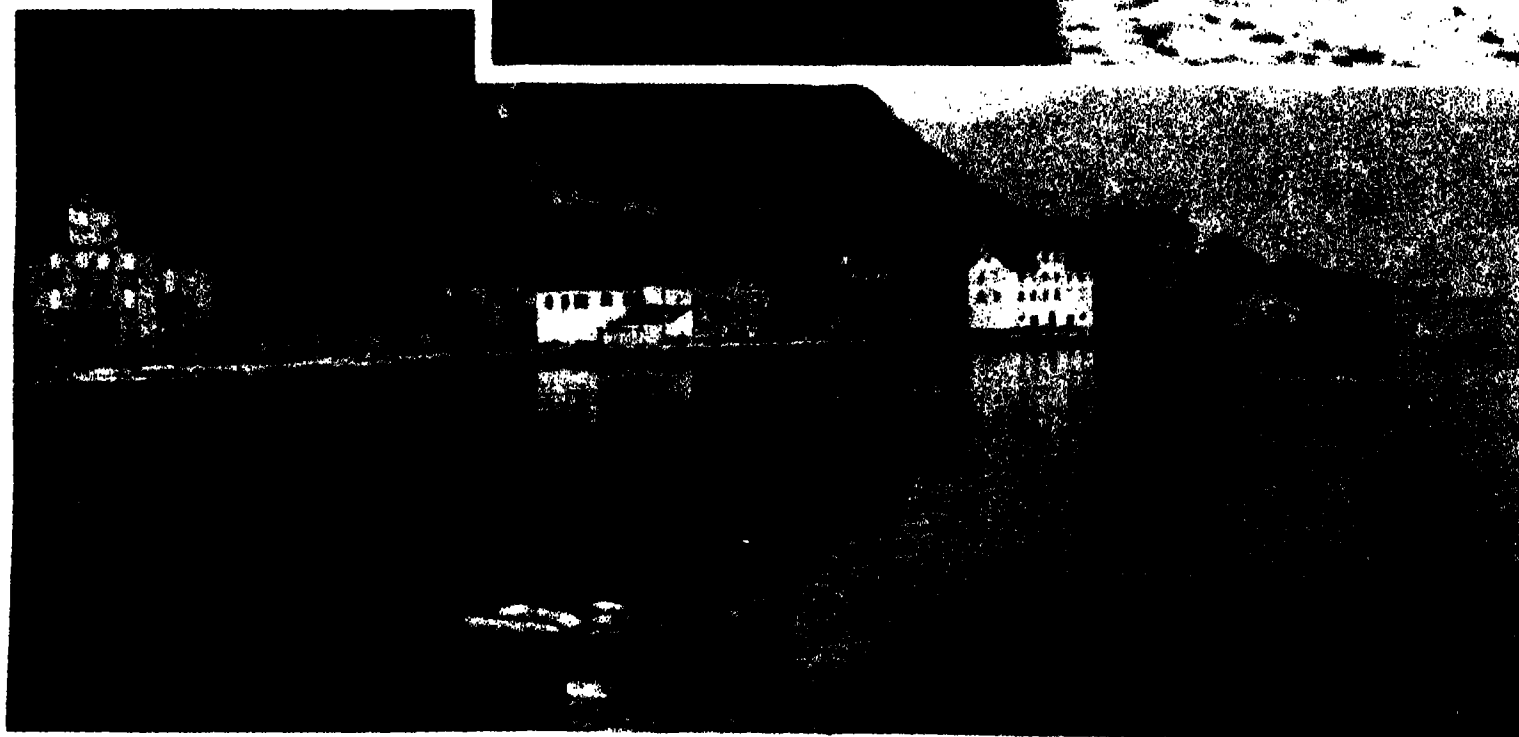
"HIGH AND OVER"—A MODERN SUN-TRAP HOUSE AT AMERSHAM, BUCKINGHAMSHIRE



E.N.A.

THE FLOATING STREETS OF CANTON, CHINA

On the river at Canton almost a quarter of a million people live in boats to leave the precious land to be cultivated. The whole life of a town is lived on the water. The boats you see are not only floating houses, but there are floating theatres, markets, and even jails.



THE PRECIOUS, TREASURED EARTH

E.N.A.

In Dalmatia, along the shores of Cattaro Bay there is so little land that is suitable for farming that the villages consists of a single line of houses as near the shore as possible to avoid taking up land. Inset: Another view of the Bay.



THE DIZZY SKYSCRAPERS OF NEW YORK

E.N.A.

Here is another kind of restricted area. Land became so scarce in New York that buildings began to grow upwards in order to accommodate the fast increasing population. Later, other American cities began to copy this type of building.

HOW MAN SHELTERS HIMSELF



E.N.A.

SURVIVAL OF TRADITION

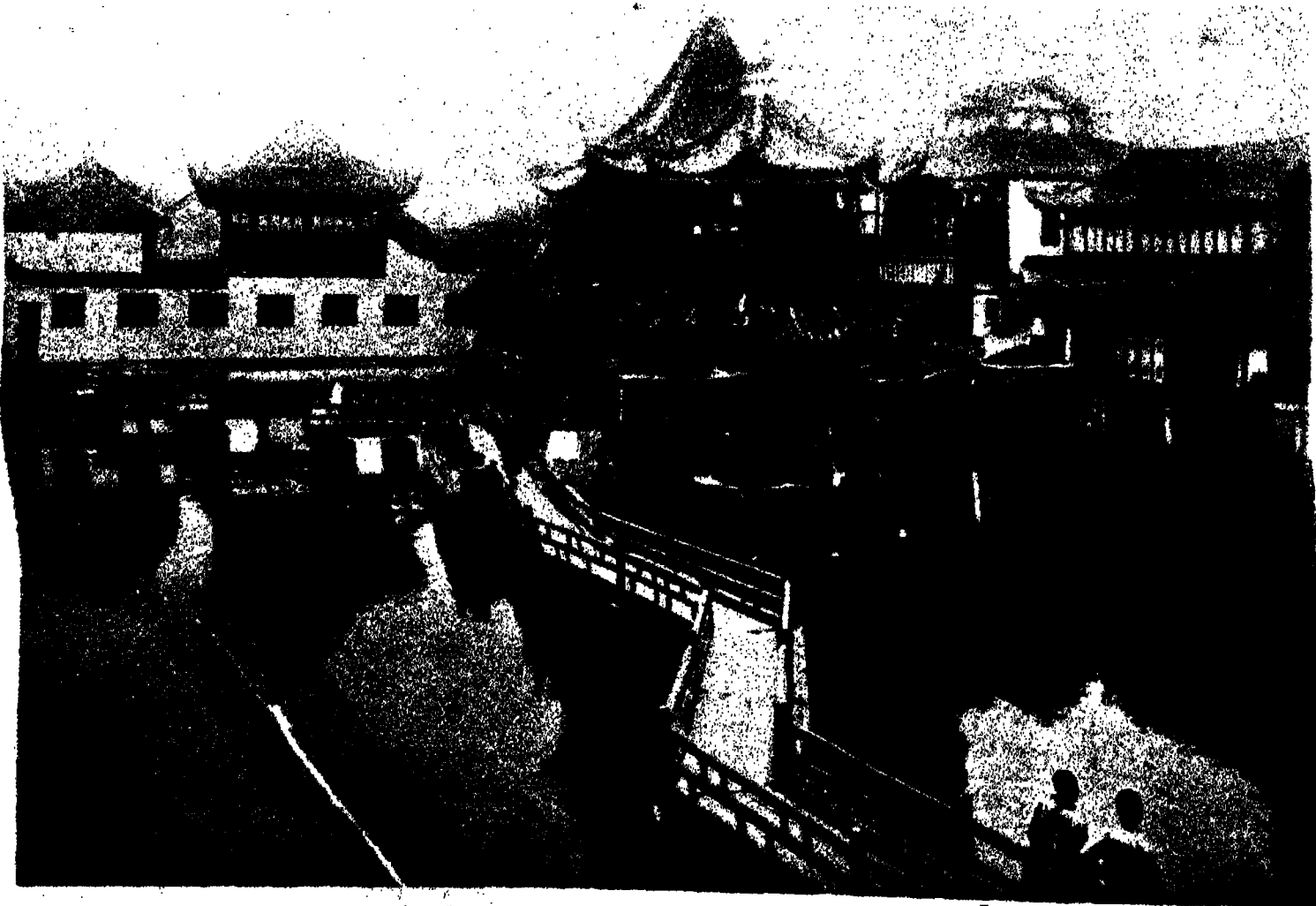


A ROPE TO REACH YOUR FRONT DOOR

These curious houses are nothing but a mass of little caves piled one on top of the other. They were built by the inhabitants of Médénine in Tunis, whose ancestors used to live in caves and who have never learned to live in any other kind of house. The front (and only) doors are reached by outside stairways or a dangling rope.

A SHANGHAI TEA-HOUSE WITH A BAMBOO ROOF

If you look carefully at this Chinese building you will be able to tell from its shape that the Chinese once lived in tents as nomads. The pointed gables are memories that still persist of a billowing tent cloth slung over a pole. Even a many-storied pagoda is nothing more than a pile of wood or stone "tents" piled one on top of the other.



Courtesy, Canadian Pacific Railway



Courtesy, German State Rlys.

SOLVING THE CITY DWELLERS' PROBLEM IN BERLIN

In certain areas of Europe and America, where the growth of population has made great demands on the available building area, the single house has largely given way to blocks of flats where, however, life is still lived on the same individual lines. The photograph shows a block of modern flats of rather severe appearance in Berlin. Each flat has its own balcony.

HOW MAN SHELTERS HIMSELF



Intourist

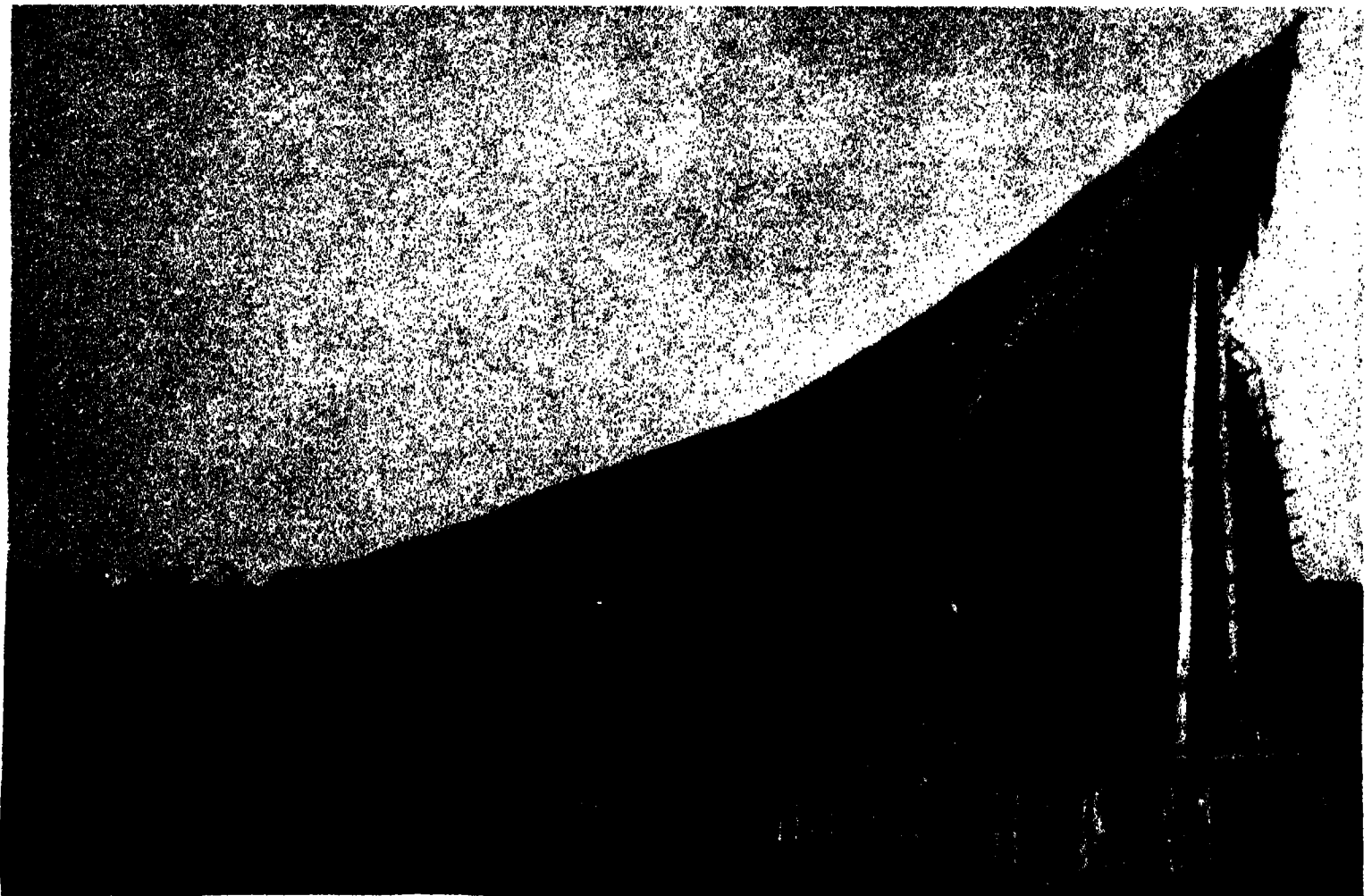
COMMUNAL HOUSES

MODERN FLATS IN SIBERIA

Many families live in this handsome building. Housework is simplified because they all share the same dining-room and wash-house, but each individual family has its own hot water supply, its own telephone—and its own radio. But family life as we know it tends to become almost impossible in such communal buildings.

AN EXCLUSIVE CLUB-HOUSE WITH A 60-FT. DOOR

This is a "dubu" where the married men of Papua live. Their wives and children have much smaller huts near by. The entire building is built of palm thatch over a pole framework more than 400 feet long and is raised 10 feet off the muddy ground. Here we see another type of communal house, but this time with a definite segregation of the sexes.



E.N.A.

TOWNS AND CITIES

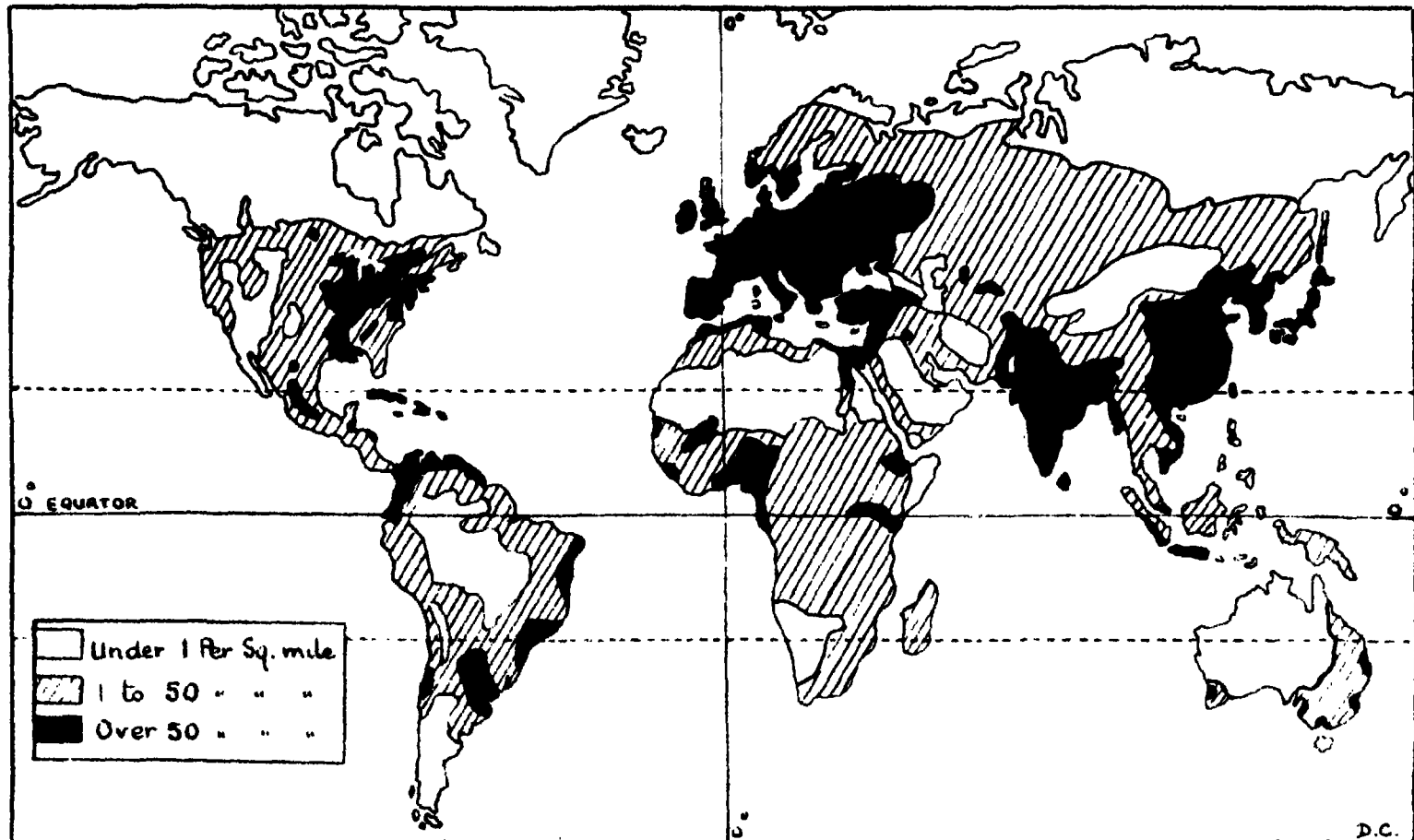


Fig. 15.—THE DISTRIBUTION OF POPULATION.

PRIMITIVE peoples that live purely by hunting and fishing do not have villages and towns. They live in scattered family groups. The presence of any neighbours would mean greater pressure on the supplies of both animal and vegetable food available. With the invention of agriculture, however, and the consequent greater certainty of the daily meal, not only the permanent habitation but groups of habitations, hamlets and villages, came into being.

For this there are several reasons, apart from the regularity of the food supply. In the first place man is, by nature, a social animal, and his herd instincts impelled him, when circumstances become favourable, to foregather with his fellows for the sake of company and mutual aid.

The actual site where the settlement was placed was rarely a matter of chance, and there is, likewise, probably scarcely a handful of modern towns for whose location quite definite geographical reasons cannot be adduced. Neither villages nor great cities are accidents. It is true that there are a few cities, founded in apparently most unsuitable situations, chiefly as the result of the whim of some individual. Thus Leningrad, originally Petersburg, was built by Peter the Great, on a foundation of millions of piles driven into the middle of a swamp on the edge of a sea that is frozen in winter. The site is so low-lying that it is liable to terrible floods,

one of which destroyed no fewer than twenty-three bridges. At the cost of much life, toil and expense, and in defiance of natural conditions, a forceful individual created a city in a spot that Nature never intended for any such purpose. This, however, is an unusual happening. The general rule, as we shall see from our evidence, is that a city represents a human response, for particular human needs, to a particular environment.

How Towns Sprang Up

Amongst the factors determining the sites of the earliest villages may be mentioned the accessibility of the fields where food was grown, of river, stream or lake where fish could be caught and movement was easier than on the roadless land, and of spring or well or other source from which water for drinking, cooking and washing could be drawn. To this day there are tens of thousands of villages, all over the world, dependent on these conditions.

In such villages, whether ancient or modern, it is common for certain crafts, of use to the community as a whole, to be practised, but they give nothing of that industrial character with which we are familiar and the organisation of skilled labour in modern towns. The villages remain, pre-eminently, agricultural, though there are some where fishing or mining are the main interests.

TOWNS AND CITIES

Trade and economic necessity caused the next step in the development of permanent settlements.

Probably the earliest type of town, itself not much larger than a big village, was the market town, and it frequently arose after the following fashion. At some point where main roads met, at river fords or at spots that could be bridged, people met for exchange and barter. At these gathering places of the simple trader refreshments were sold from booths which in due course gave place to the inn, a permanent building where refreshment for man and beast was obtainable. Probably the next permanent building at the cross-roads was the blacksmith's forge where horses were shod, carts repaired, and simple agricultural implements were fashioned. With specialisation of labour and the rise of definite crafts, other homes and workshops gathered at the cross-roads, and a church was erected for the satisfaction of spiritual needs. Very often, however, the process may have been reversed and the town may have grown under the influence of a monastery or abbey, or under the protection of a castle. Until the Industrial Revolution, however, most human settlements remained comparatively small.

Because the larger towns were the home of the tradesman, the merchant and the banker, and therefore the repository of a great deal of material wealth, they tempted the avarice of possible enemies. Hence they were frequently surrounded by walls for purposes of defence, and the girdle was circular because, for a given length of wall, a circle encloses a greater area of ground than any other shape. The streets were crooked and winding as such an arrangement was considered an advantage for defensive purposes.

Tall Buildings and Spacious Parks

As the population increased, space became precious, the girdle would not yield, and the city grew towards the sky. Tall buildings, projecting upper stories, and narrow streets were some of the results of the attempt to accommodate the ever-growing number of the city's inhabitants. Conditions were most insanitary; refuse was thrown into the streets and the ditch outside the wall was the receptacle of all kinds of offal and debris.

When modern developments both in attack and defence rendered many of the old-fashioned fortifications undesirable or useless, the walls were sometimes removed. The broad open spaces thus regained were frequently retained for parks, promenades and broad thoroughfares, as in the case of the boulevards of Paris and the Ring Strasse of Vienna. Few cities of any size now retain their former walls intact, but here and there an odd gate or rampart remains a picturesque reminder of a somewhat unpeaceful past.

The growth of really big cities in any number is almost entirely a modern phenomenon. The dwellers therein are not producers of raw material and their interests centre in manufacturing on a large scale, in commerce, in local government and administration. They are dependent on easy means of communication without which they could neither receive adequate supplies of food and raw material nor dispose of the results of their creative energies.

Birth of the Suburbs

Owing to the development of transport facilities it is now possible to establish a city where, formerly, not even a tiny village could have existed. Thus Kalgoorlie, in arid Western Australia, depends for all its food on railway communication with Perth and for all its water on a pipe-line, 350 miles long, that brings it from the distant Darling Mountains.

Rapid transit has led to great changes in the nature of the human occupation of the city. No longer does the merchant live over his place of business. During the morning congested streams of human beings converge to the centre; evening sees the same streams outflowing to the circumference of their homes in more or less attractive suburbs.

The busiest towns are, on the whole, on the great coal and iron fields, and the greatest of them, as well as the largest number, are in the most densely populated areas. Generally speaking, we may say that those areas (see Fig. 15) where the population is densest have the greater proportion of city dwellers. But this is not invariably true. Australia provides a very notable exception.

Towns rise and fall, some of them very rapidly. Those that depend on some particular industry may fade into insignificance if they do not meet a changing demand; those that depend on mining may be absolutely deserted when the mine gives out.

There is much comment, from time to time, about the evil effects of city growth, but a great deal of it is misdirected. Though the farmer must, in the nature of things, remain the fundamental member of society, for without him we die, yet in the complex life of modern times the city is a necessary and important factor.

And in every civilised country, even those of its inhabitants who prefer to live, or are compelled to live, away from the throbbing streets of their great or historic centres are interested and even proud of them. The great city, with its historic traditions, its wealth of things spiritual as well as material is, in a sense, the greatest result achieved by civilisation since man began to build.

ERNEST YOUNG, B.Sc.



S.A. Railways

DWELLINGS THAT VANISH IN A FEW SEASONS

The savage of Natal does not build a permanent home : he is content with a loosely, "jerry-built" kraal or hut. For he stays at home only for a few seasons until the soil is exhausted—having no knowledge of how to preserve its fertility.



G.W.R.

"ALONG THE COOL SEQUESTERED VALE"

This little hamlet, so typical of the English landscape, is directly descended from these crude huts, and owed its rise to similar conditions. There is this difference, of course, that the English village represented a permanent settlement.

TOWNS AND CITIES



E.N.A.

A MUSHROOM CITY OF BECHUANALAND

This Kaffir settlement of Mochudi looks like a bed of giant mushrooms. The hamlet has grown into the village, corporate life has started, and permanent settlement on a larger scale begun. The enclosure on the left is a communal animal pen.



E.N.A.

BUILDING ON THE CROSS ROADS

Have you ever noticed how many villages in Europe have cross roads for their sites? Usually you will find in one corner the village church, which stands as a landmark for the neighbourhood. The church marked the centre of village life.



E.N.A.

SPECIAL WOODEN PIERS FOR DRYING COD

Here is the little fishing village of Quo Vidi, in Newfoundland, which reaps the harvest of the sea. Note the platforms that have been specially constructed for drying the fish. On the coast fishing is the chief occupation for everybody.



G.W.R.

AN OLD WORLD CORNISH FISHING VILLAGE

Such typical fishing villages as picturesque Polperro, in Cornwall, are usually as far out to sea as possible so as to be near the fishing grounds. But to be protected from storms, it is set at the head of a little harbour, into which the catch is brought.

TOWNS AND CITIES



Indian Railways

THE VILLAGE BLACKSMITH—INDIAN VERSION

Formerly the smith was the most important man in the village. This still holds good in India, where many of the villagers do not rely on the manufactures of the town, but are self-supporting. But village crafts generally are fast disappearing.



High Commissioner, New Zealand

MASTER CARVER OF THE MAORIS

Here is a New Zealand Maori carver at his handiwork. Little communities have other interests than providing themselves with the necessities of life. As can be seen on the right, the carvings are realistic as well as decorative.



E.N.A.

THE GLAMOUR OF AN EASTERN MARKET SQUARE

Against a background of palms and amidst the colour and bustle of the Dark Continent is set this little Algerian market square of Biskra. It was for the purpose of trading by barter that such market centres as these were first established



Courtesy, G.W.R.

OPEN STALLS AND CATTLE PENS ROUND THE MARKET CROSS

In England the market day is still an occasion for those who live in the country and they flock regularly to the market towns. Motor traffic has widened the areas and brought the large towns nearer, but the markets of sheep, cattle and dairy produce still remain important. This picture, with the one above, forms a striking contrast between East and West.

TOWNS AND CITIES



LIKE A PICTURE FROM A HISTORY BOOK

This striking view of Carcassonne in France is a reminder of the Middle Ages when towns and cities were walled round for fortification against invasion.

E.N.A.

MAKING THE BEST OF SPACE

Note how close the houses are to the wall that shuts them in. There is no room for detached or semi-detached villas in this part of Ragusa in Dalmatia.



E. Young



E. Young

NO THOROUGHFARE ON THESE STAIRCASE ROADS

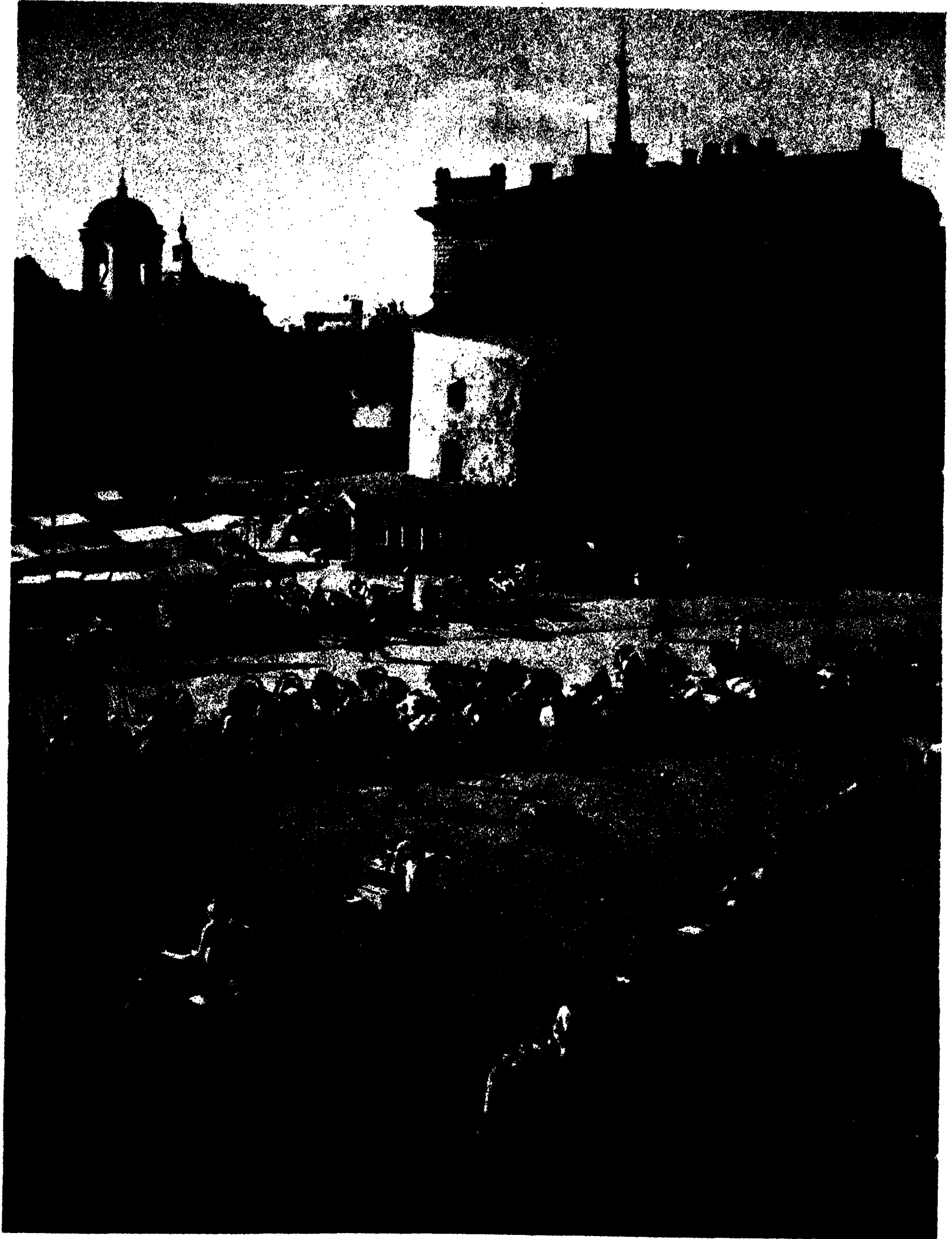
In rocky Corsica, towns like Calvi have been built on steeply rising ground and the streets were originally a succession of steps.

A MAZE OF ALLEYS AND ROOFS

Right: How narrow the streets are round this island site in Bastia in Corsica. These streets were not meant for motor traffic!



J. Young

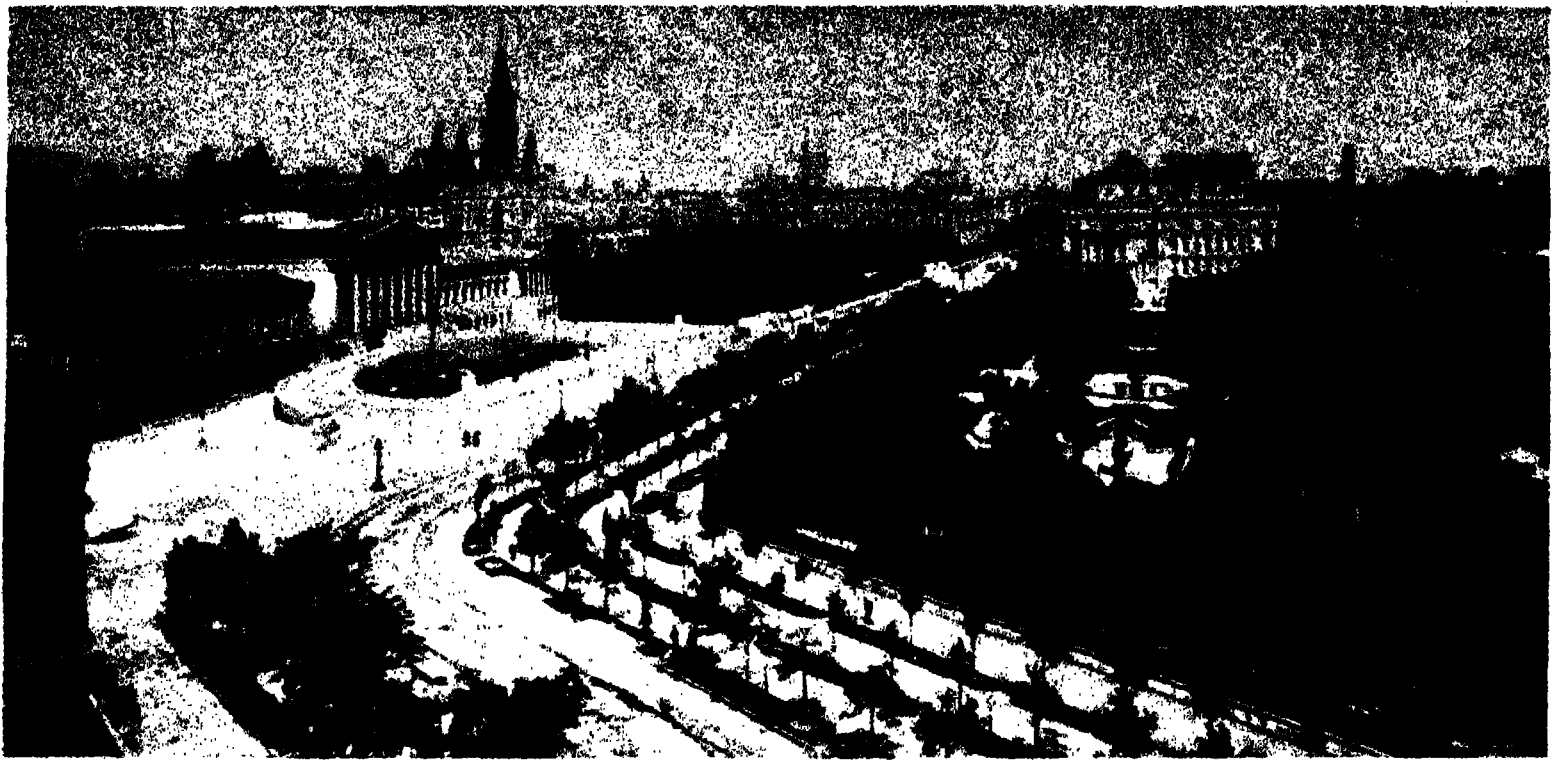


ONCE A PROUD CITY WALL—NOW A RESTAURANT

Finnish Tourist Bureau

This circular kiosk was once a watch tower in Viborg's city walls. But as this town in Finland expanded, the walls had to be pulled down, leaving behind this quaint memorial to the departed glory of a distant, and doubtless eventful, past.

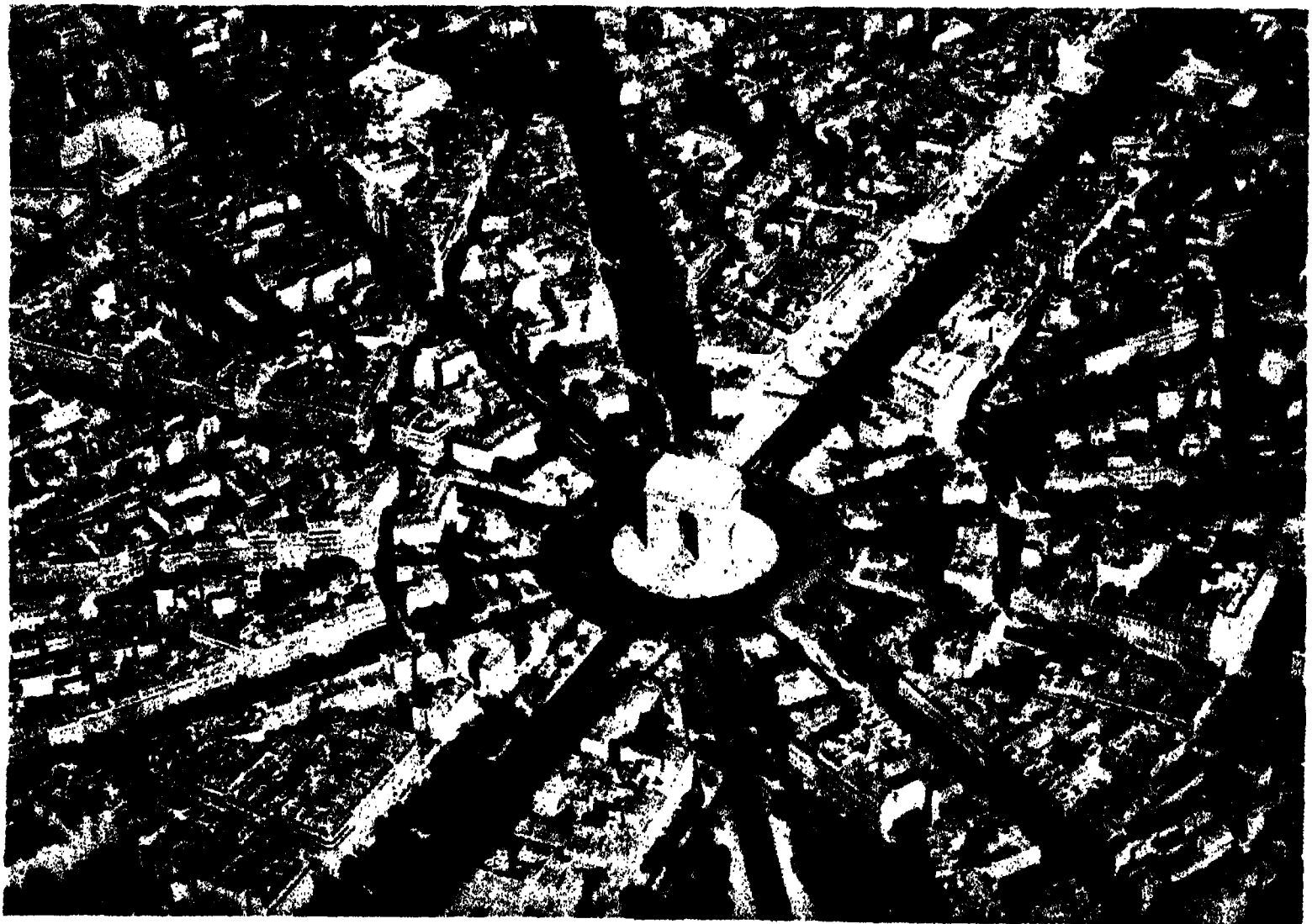
TOWNS AND CITIES



E.N.A.

THE SPACIOUS PROMENADES OF THE CITY OF SONG

The Houses of Parliament and the Town Hall of Vienna form an historic background to the wide promenades that mark the site of the city walls. But, as the result of the Peace Treaties, the former glory of Vienna has been sadly dimmed.



E.N.A.

A CITY LAY-OUT TO DELIGHT THE MATHEMATICIAN

Here is an aerial view of Paris, showing how the broad streets radiate from a centre point—the Arc de Triomphe. When Paris was rebuilt, new thoroughfares and tree-lined boulevards were opened which followed the lines of the old city walls.

TOWNS AND CITIES



SWEET CITY OF DREAMING SPIRES

Courtesy, G.W.R.

From Magdalen Tower we look down on the broad sweep of the famous High Street of Oxford, "whispering from her towers the enchantments of the Middle Ages." Despite commercial invasion, the colleges remain sanctuaries of learning.



THE SPIRITUAL HOME OF MANY FAMOUS MEN

Courtesy, L.N.E.R.

Another example of the market town that has become a centre of world culture is the equally romantic city of Cambridge with her time-mellowed colleges. This is a view of King's College Chapel, a fine example of perpendicular architecture.

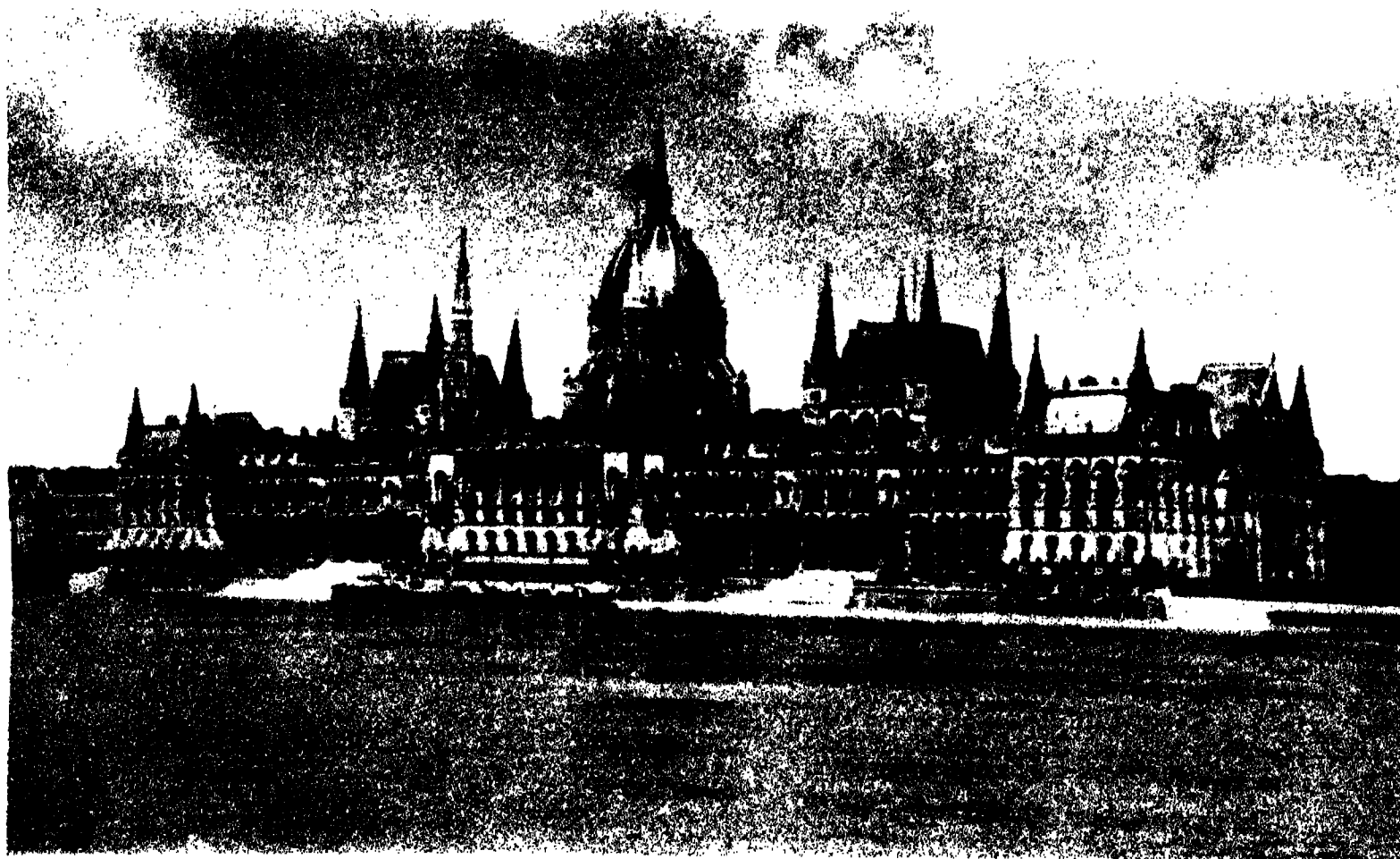
TOWNS AND CITIES



E.N.A.

THE HOME OF THE FORMER KINGS OF SPAIN

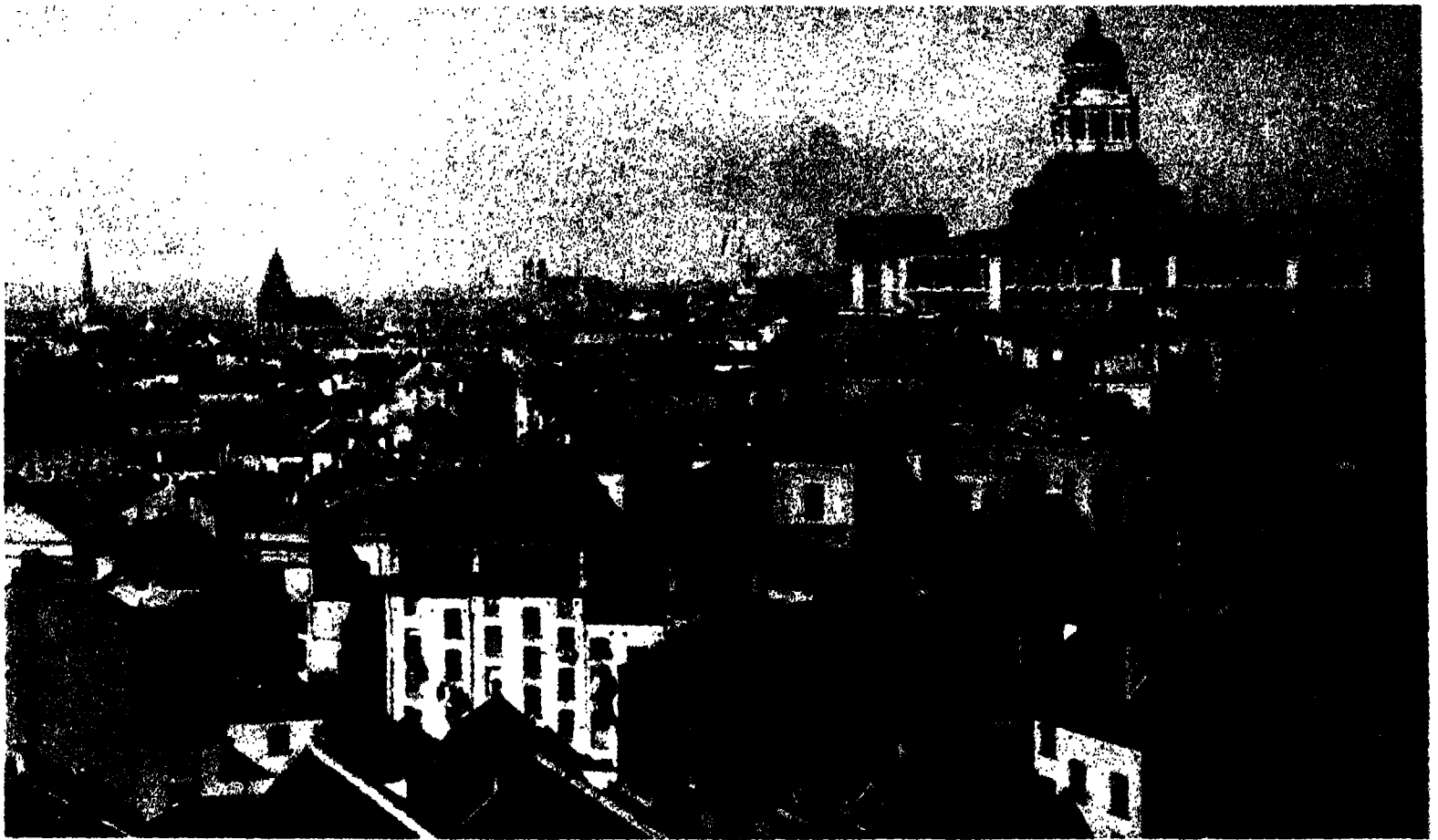
Set on a plateau and encompassed by mountains, lies the historic city of Madrid. On the right rises majestically the palace of the former kings. Where a country is a monarchy its capital contains one of the king's palaces. Spain is now a Republic.



E.N.A.

A PARLIAMENT ON THE BLUE DANUBE

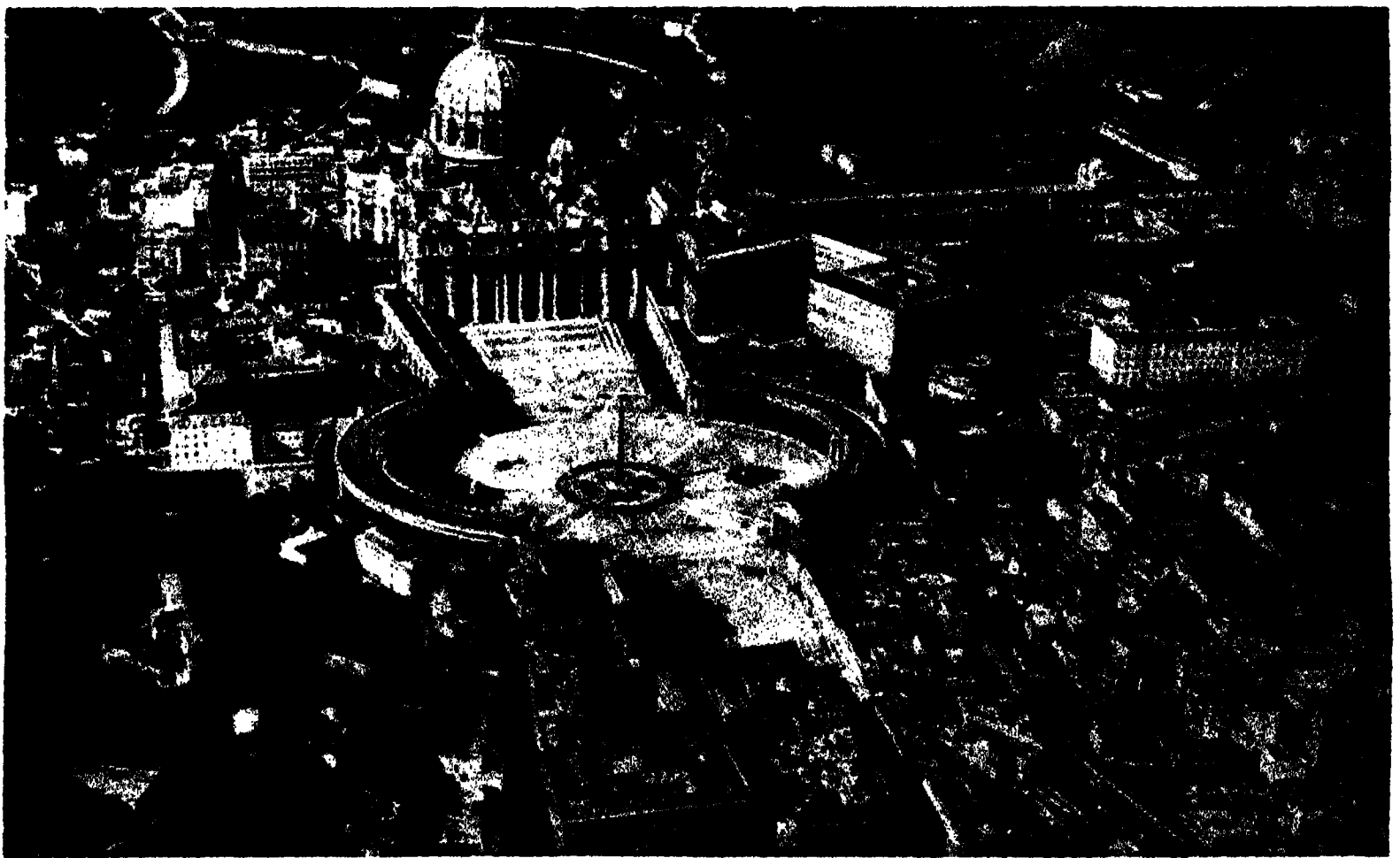
The government buildings of Budapest are beautifully situated on the water-front of the romantic Danube. The city is formed of the two ancient towns of Buda and Pest, one on either side of the river. Six bridges link the two banks.



E.N.A.

ABOVE THE CLUSTERED ROOFS OF BELGIUM'S CAPITAL

A panorama of Brussels showing the famous Palais de Justice. Just as the government buildings are situated in the capital of a country, so, too, are its central law-courts, usually characterised by their imposing size and dignity—befitting legal palaces.



E.N.A.

THE GLORY OF ST. PETER'S AND THE HOLY CITY

Over Rome, capital of the Roman Catholic faith, broods the spirit of religion. Here is the Vatican city, independent of the rest of Rome, with the great cathedral of St. Peter, and the palace and gardens of the Vatican where the Pope resides.

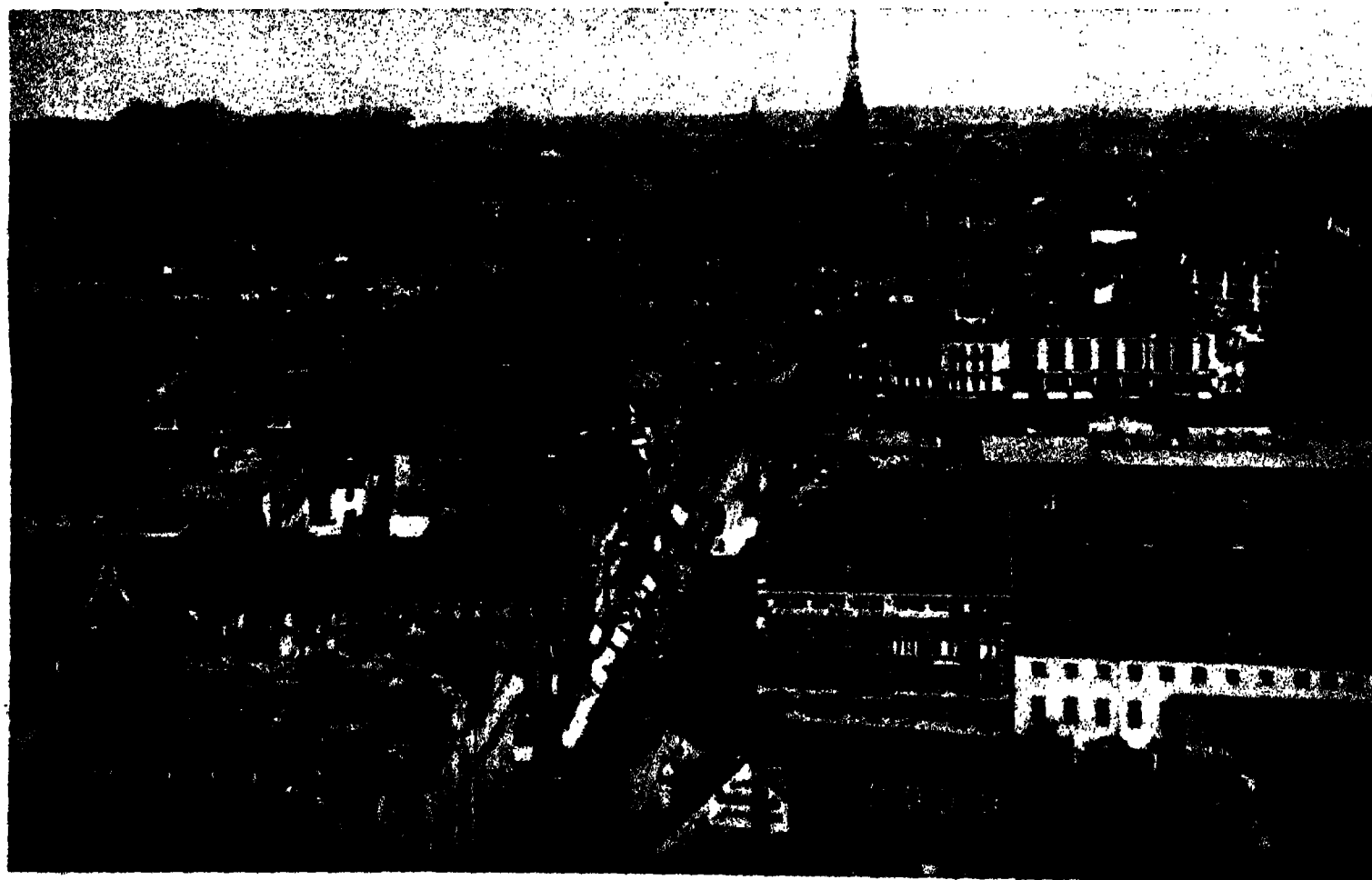
TOWNS AND CITIES



E.N.A.

THE ROOF OF MOSCOW—A JAGGED SILHOUETTE OF SPIRES AND DOMES

This view of Moscow reflects the deep religious feeling of the Russians through past centuries. It was a city of churches, monasteries and religious buildings. Many of these buildings have now been taken over for secular purposes.



E.N.A.

THE STRAIGHT SKY-LINE OF BERLIN

Berlin is a city of palaces, law courts and administrative offices. "The skyline of Berlin is more unbroken by church towers than that of almost any other city." In fact, the stern Teutonic tradition is portrayed in the severity of its architecture.

TOWNS AND CITIES



E.N.A.

THE WORLD'S MOST BEAUTIFUL HARBOUR

No harbour could have a more magnificent setting than Rio de Janeiro with the famous Sugar Loaf Mountain rising sheer out of the sea and forming the feet of the "Stone Man," the name given to the human-like formation of the cloud-capped mountain ranges in the background. Rio, the Brazilian capital, is the centre of the most populous part of South America.

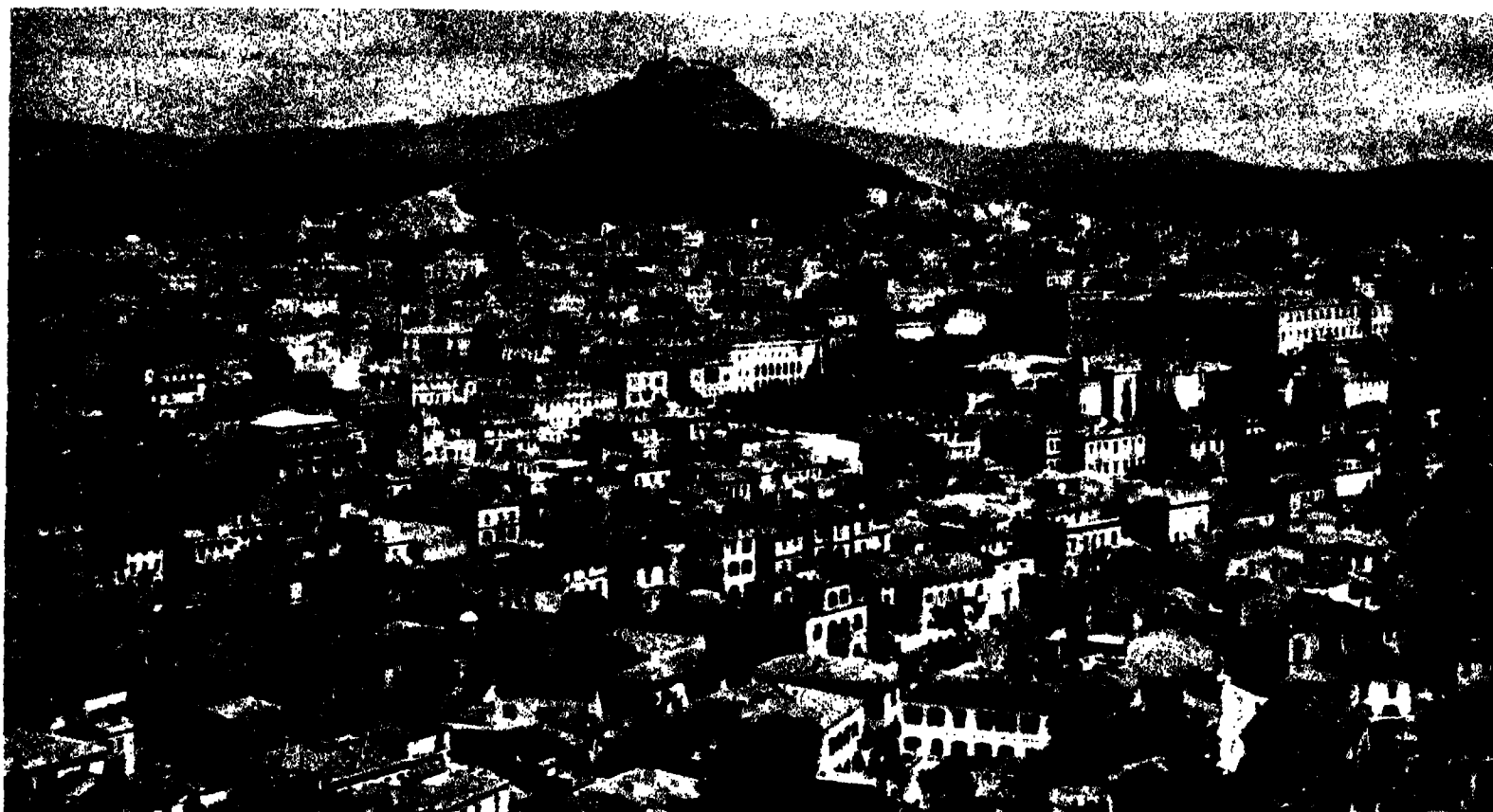


E.N.A.

THE AGE-OLD CITY OF THE MUEZZINS

A view of one of the playgrounds of ancient history—Cairo, sparkling with the marble and alabaster of its mosques and minarets. For a long time Egypt had two capitals, one in the delta and the other in the valley of the Nile. In days of bad communications it was difficult to govern this long, narrow country from one centre. But, to-day, Cairo is the capital.

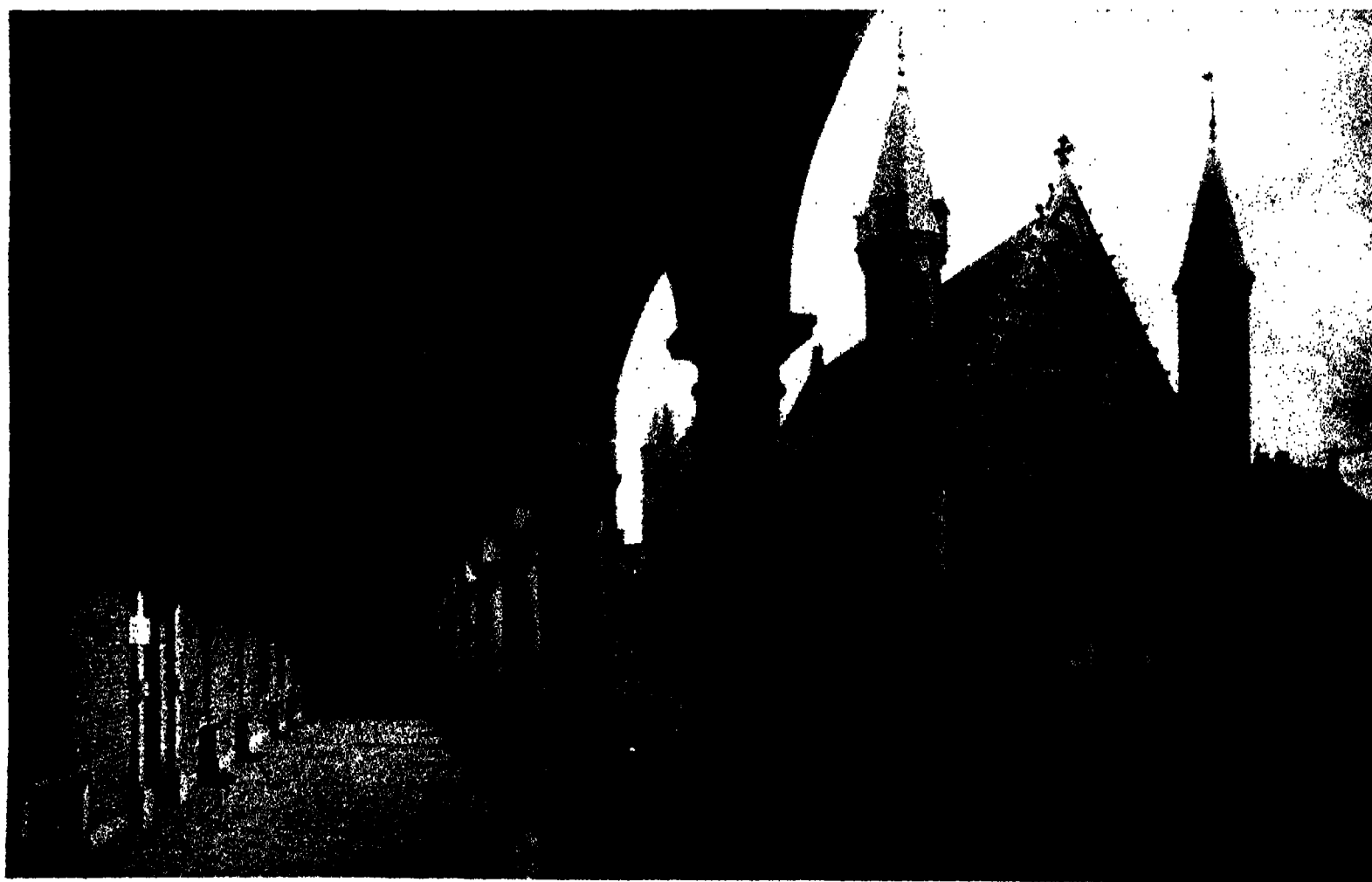
TOWNS AND CITIES



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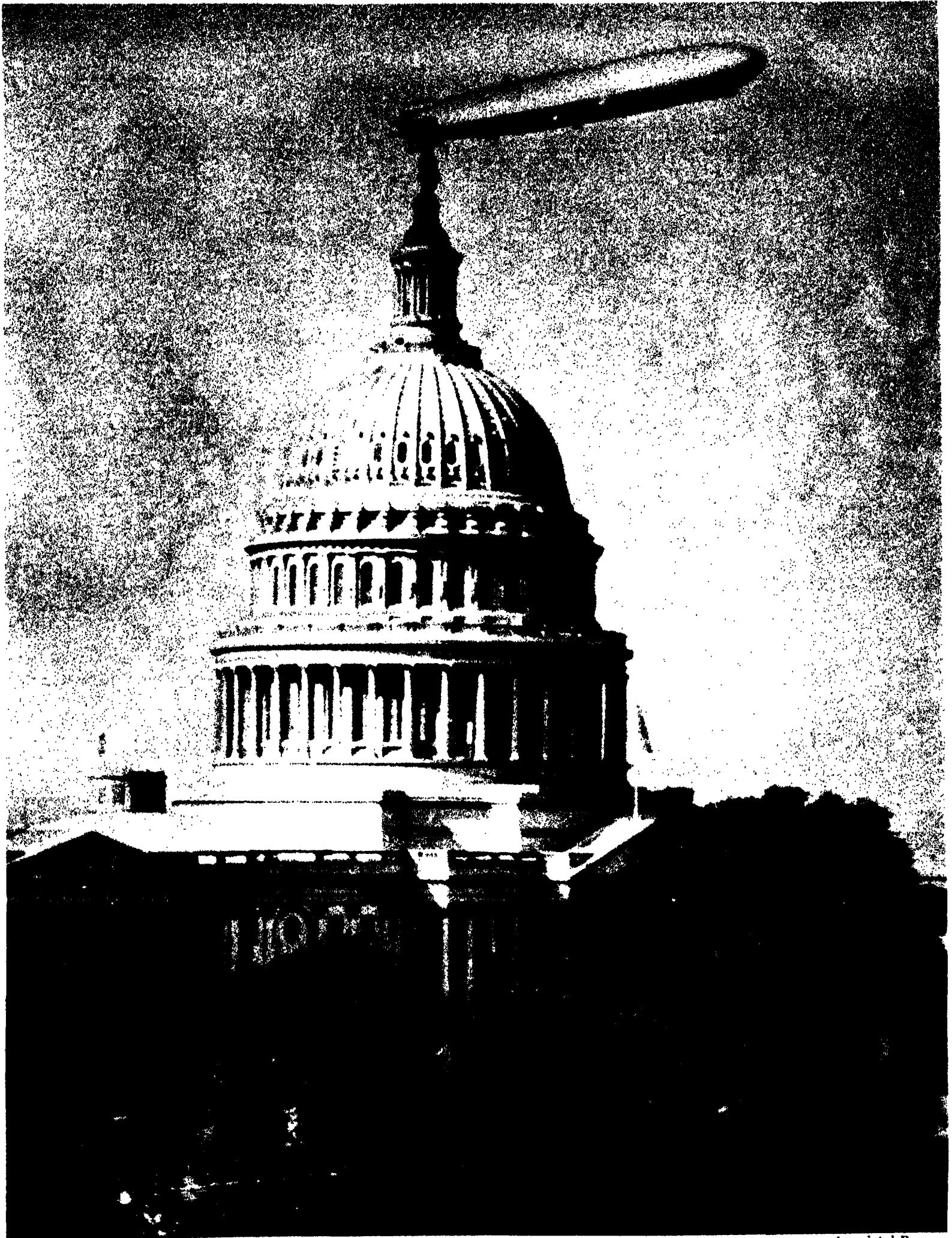
THE GLORY THAT WAS GREECE

With the marble of the Parthenon glittering in the bright sunlight of the Mediterranean stands the Acropolis, the sentinel of Athens built on and round a hill for defence. This capital of little Greece has influenced more than any other city the culture of mankind. But her glory has departed, leaving memorials of exquisite beauty as a reminder of her former self.



WHERE THE NATIONS SECURE EQUAL JUSTICE FOR THE WORLD

Here is the Hall of the Knights in the International Court of Justice at the Hague in Holland. It was here that the Reparations Conference sat, and also where the nations meet to settle matters affecting International Law and Justice.



Associated Press

CAPITALS OF COMPROMISE.—(1) WASHINGTON—THE WHITE HOUSE

Human jealousy has sometimes determined the site of the capital. In the United States the parties of the north and south could not agree on the capital, and accordingly a site was chosen between the two. This is a view of the Capitol in Washington.

TOWNS AND CITIES



E.N.A.

(2) CANBERRA—A CITY IN THE BUILDING

When Australia became a Commonwealth, the jealousies of Sydney and Melbourne prevented either of these cities from being chosen as the seat of government. As a compromise, a site for a new city was chosen at Canberra, which is now being built between the two. The view is a recent picture of the imposing Parliament House, which was formally opened in 1927.



(3) OTTAWA—THE PARLIAMENT BUILDINGS

In much the same way in Canada, because of the jealousies of the mainly French population in Quebec and the mainly British population in Ontario, the capital was eventually fixed at the then little town of Ottawa, again between the two.

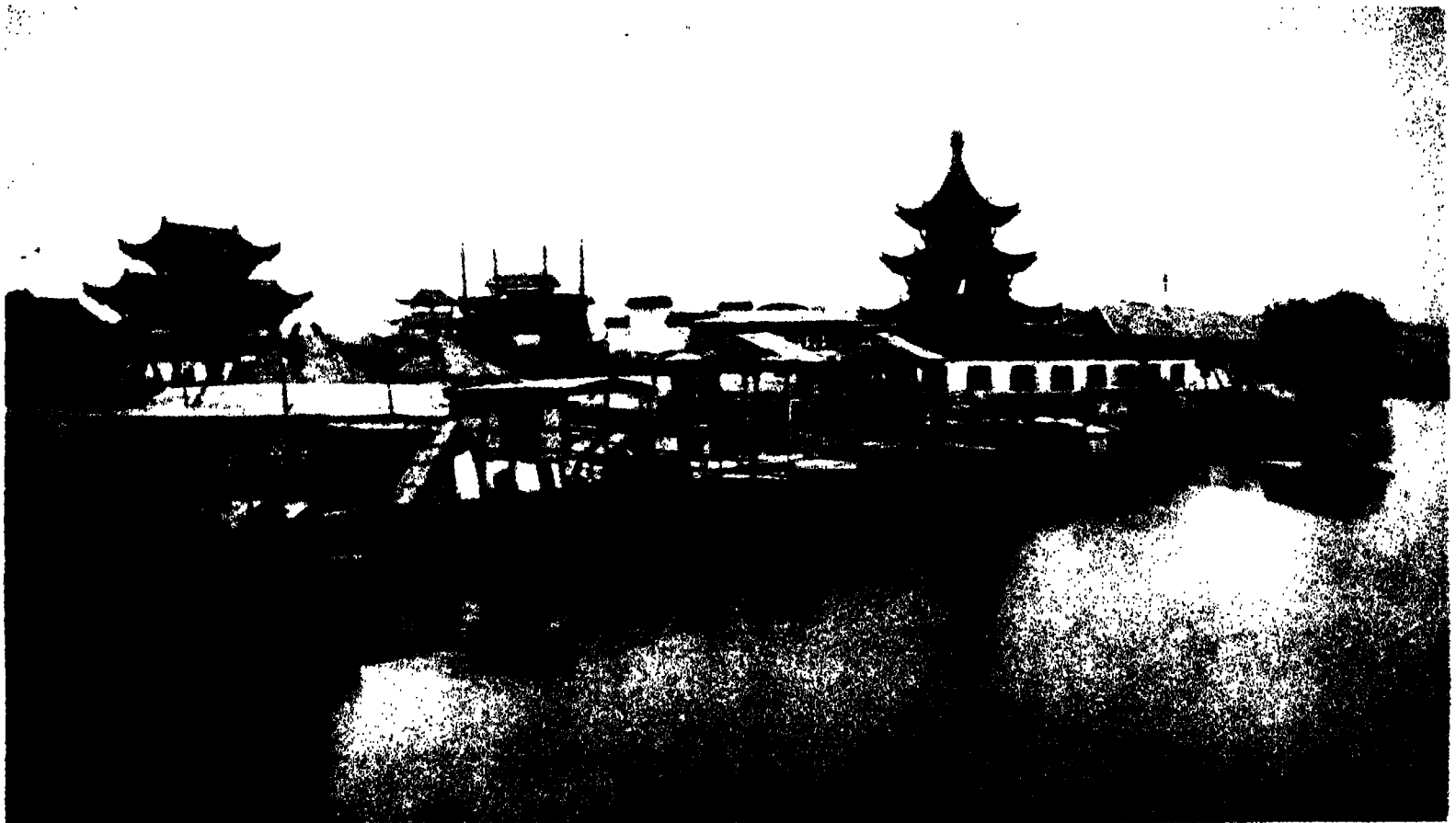
TOWNS AND CITIES



E.N.A.

THE WESTERN WORLD IN THE FAR EAST

If you have never been to Tokio you would imagine that this was a view of a European town, yet it is the business section of the capital of Japan, with its splendid modern thoroughfares—showing how the Japanese are assimilating Western ideas

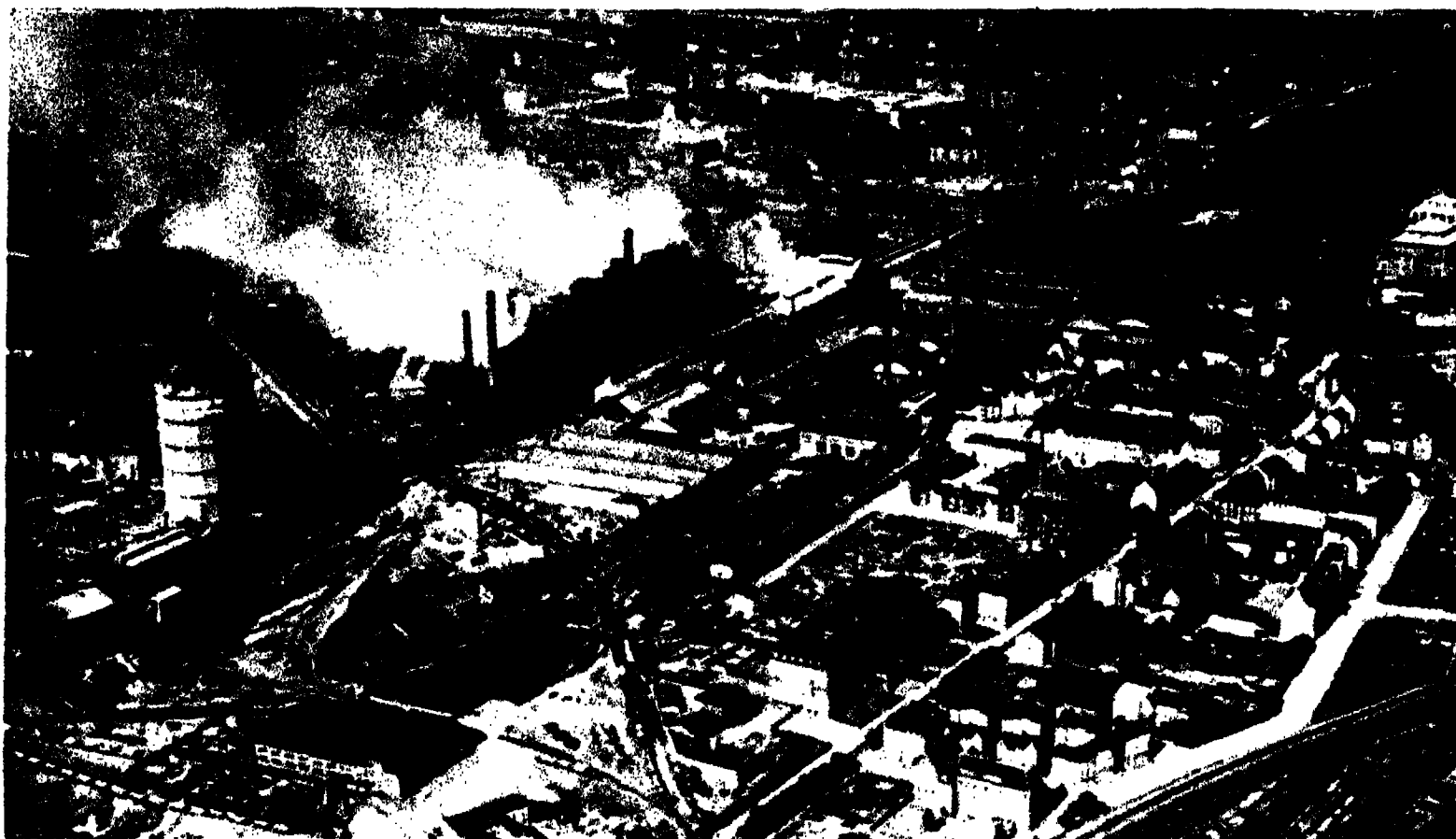


E.N.A.

THE FLOATING CAPITAL OF CHINA

Contrast with the above this picture of Nanking, the capital of China. The river—the Yang-tse-Kiang—is four miles wide. In times of flood it may be twenty miles wide. The Chinese move slowly and are not attracted to Westernisation.

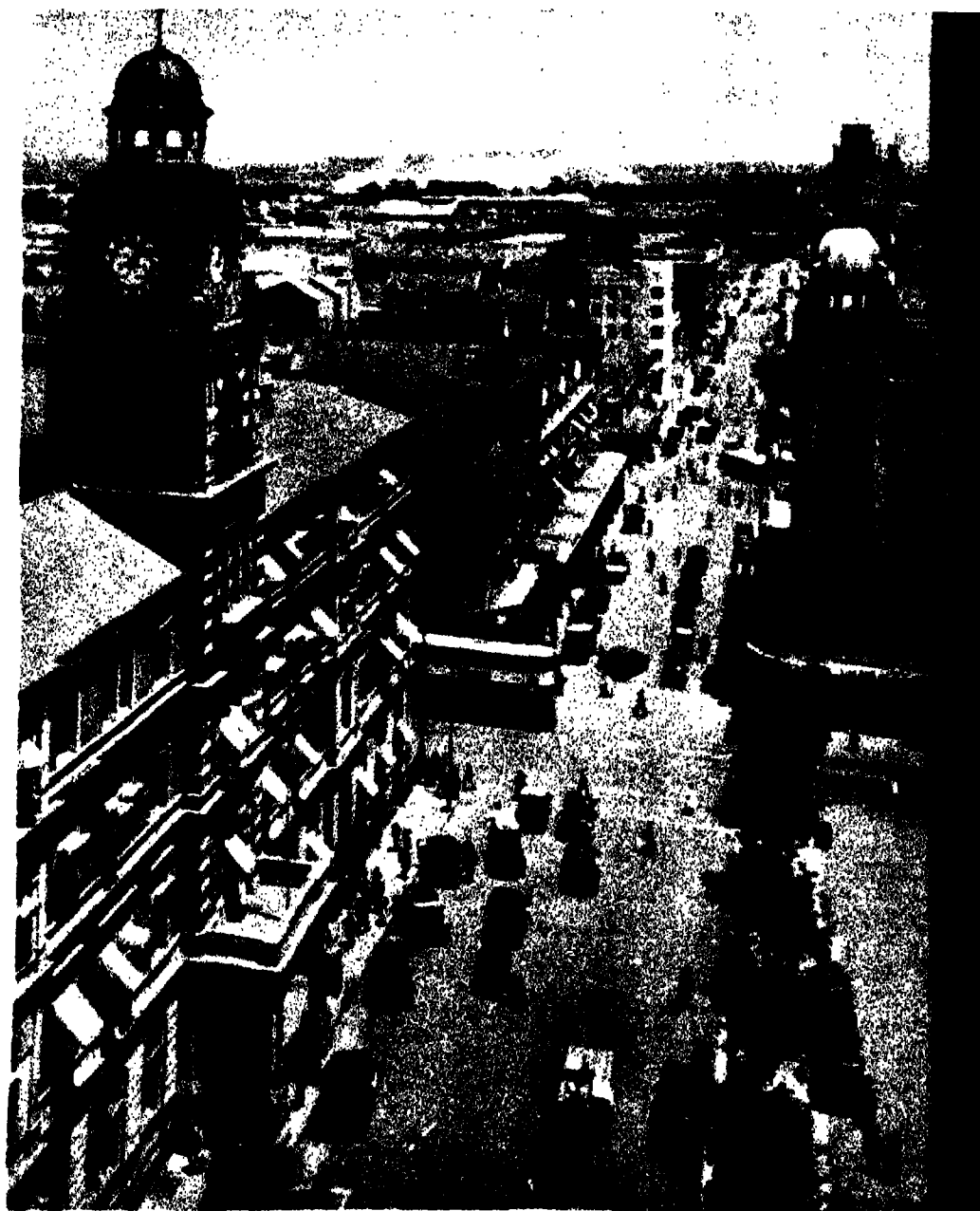
TOWNS AND CITIES



German Railways

TOWERING CHIMNEYS SURROUNDED BY A PALL OF SMOKE

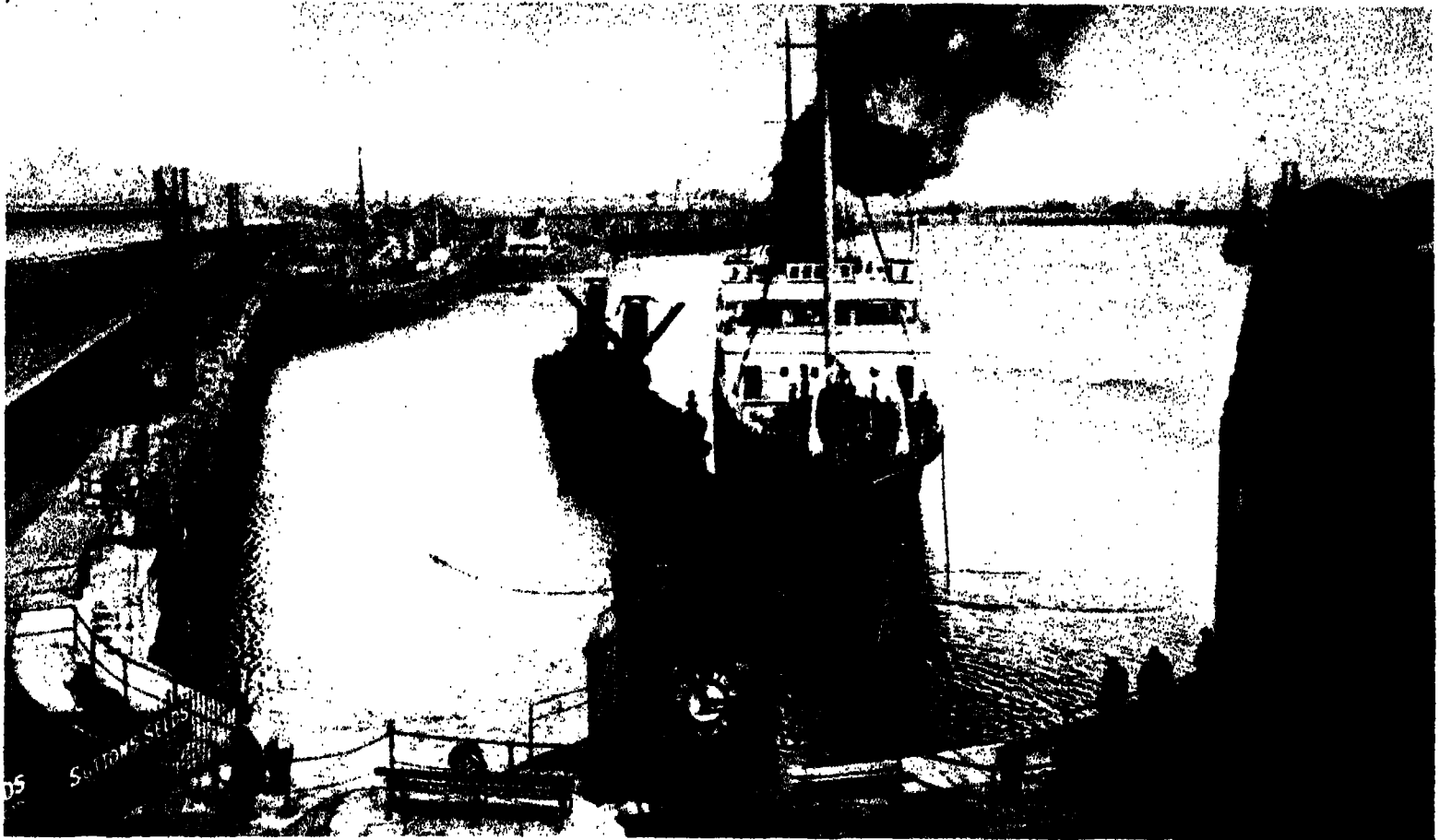
A typical view of an industrial town. Since the industrial revolution such towns have sprung up all over the world. Mile after mile is dotted with chimneys, factories, and furnaces. Here is Dortmund, in Germany, a typical example of a complete lack of artistic sense or knowledge of hygiene on the part of those who designed cities to house an industrial population living near their work.



South African Railways

WHAT THE GOLD MINES HAVE DONE

Here is the mining centre of Johannesburg. In the background the dumps of refuse from the gold mines form a curious addition to the landscape. (Note the double traffic line for pedestrians, a system of safety first which is attracting attention for possible use in other large cities.)



L.M.S.R.

THE RISE OF A FERRY TOWN

To meet the ever increasing passenger traffic across narrow waters, ferry towns, of which Holyhead is an example, have become increasingly important. It is here that the passenger changes between boat and train, and as speed is the first consideration, the ferry town is built as far out to sea as possible, in order to shorten the slow water part of the journey.

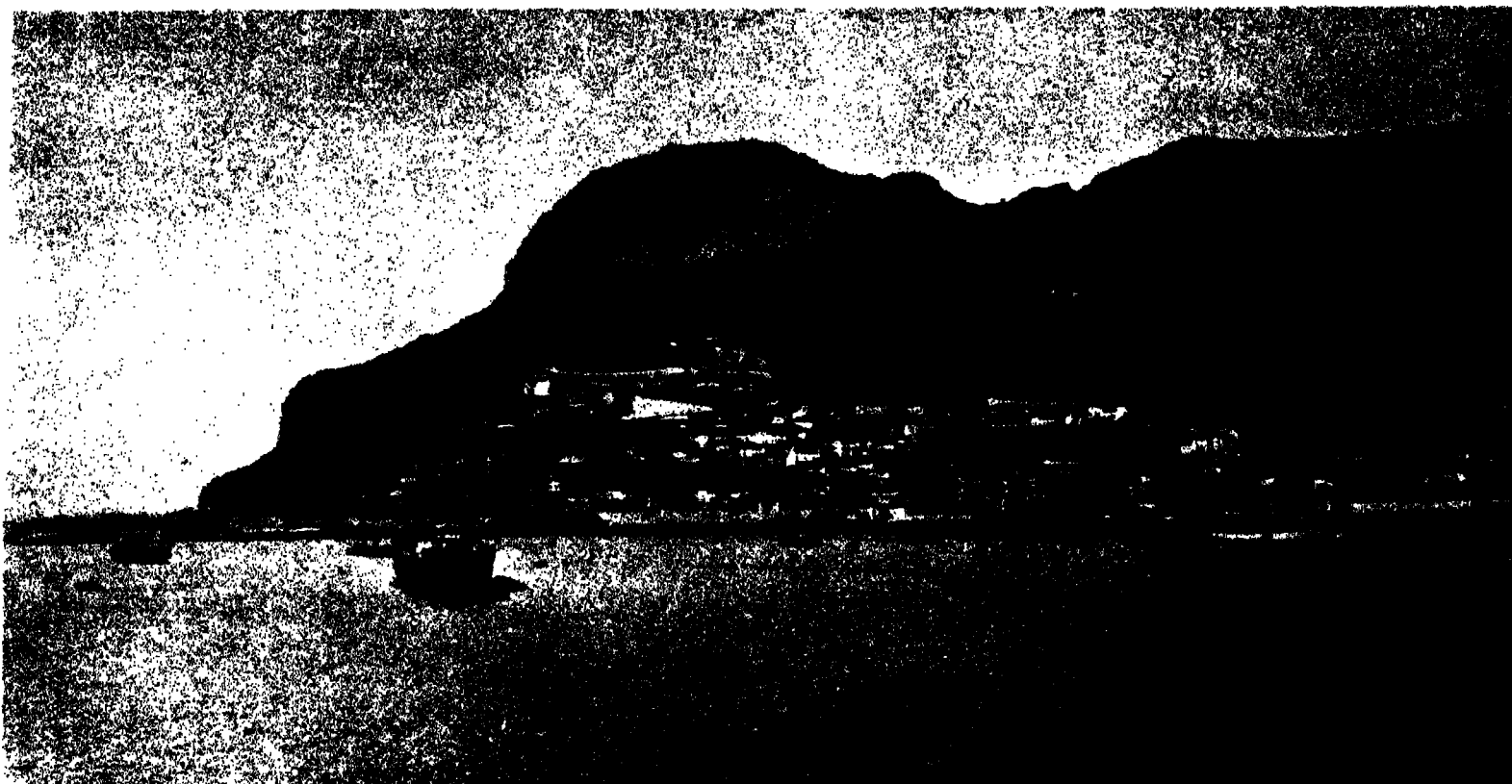


Manchester Ship Canal Co.

MANCHESTER'S DEEP WATER DOCKS

Manchester has found it worth while to build a ship canal so that vessels may enter well into the land—water affording cheaper transport. *Inset:* Barton Aqueduct, which carries the Bridgewater Canal over the Manchester Ship Canal.

TOWNS AND CITIES



G.P.A.

THE PRECIPITOUS STRONGHOLD OF GIBRALTAR

Once the western limit of the civilised world, and one of the legendary Pillars of Hercules, the rock of Gibraltar, frowning over the narrow straits, has seen much fighting and bloodshed. Now a British garrison fort and coaling station, Gibraltar has owed its importance to its strategic position as key port between the enclosed Mediterranean and the Atlantic Ocean.

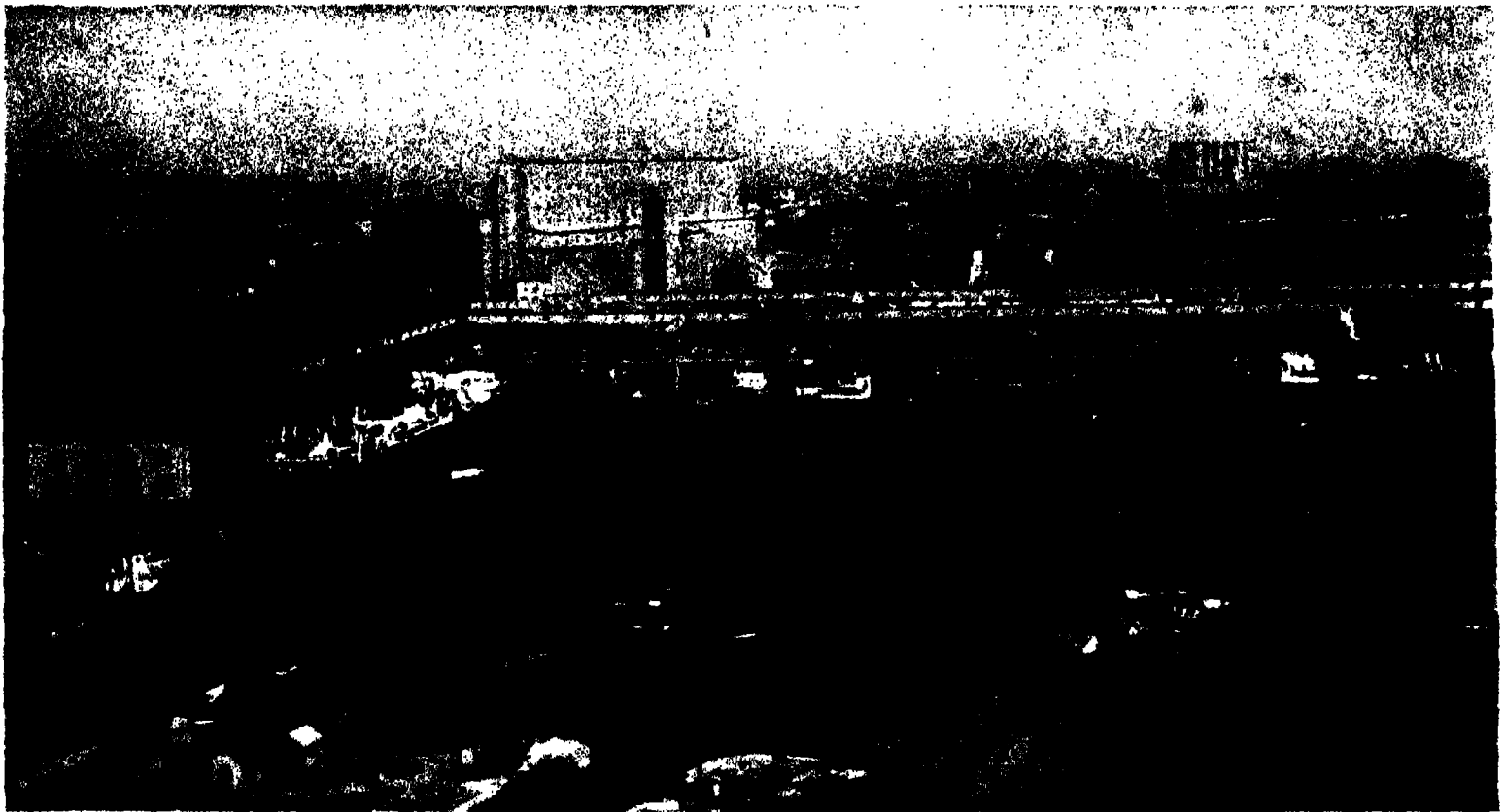


G.P.A.

THE GOLDEN HORN OF HISTORIC ISTANBUL

Empires have waxed and waned, and many different races have possessed Istanbul, formerly known as Constantinople and in Hellenic times as Byzantium. Like Gibraltar, it is a key port commanding the entrances to the Sea of Marmora and the Bosphorus. Its importance was further enhanced since it was directly situated on the caravan route from Asia to Europe.

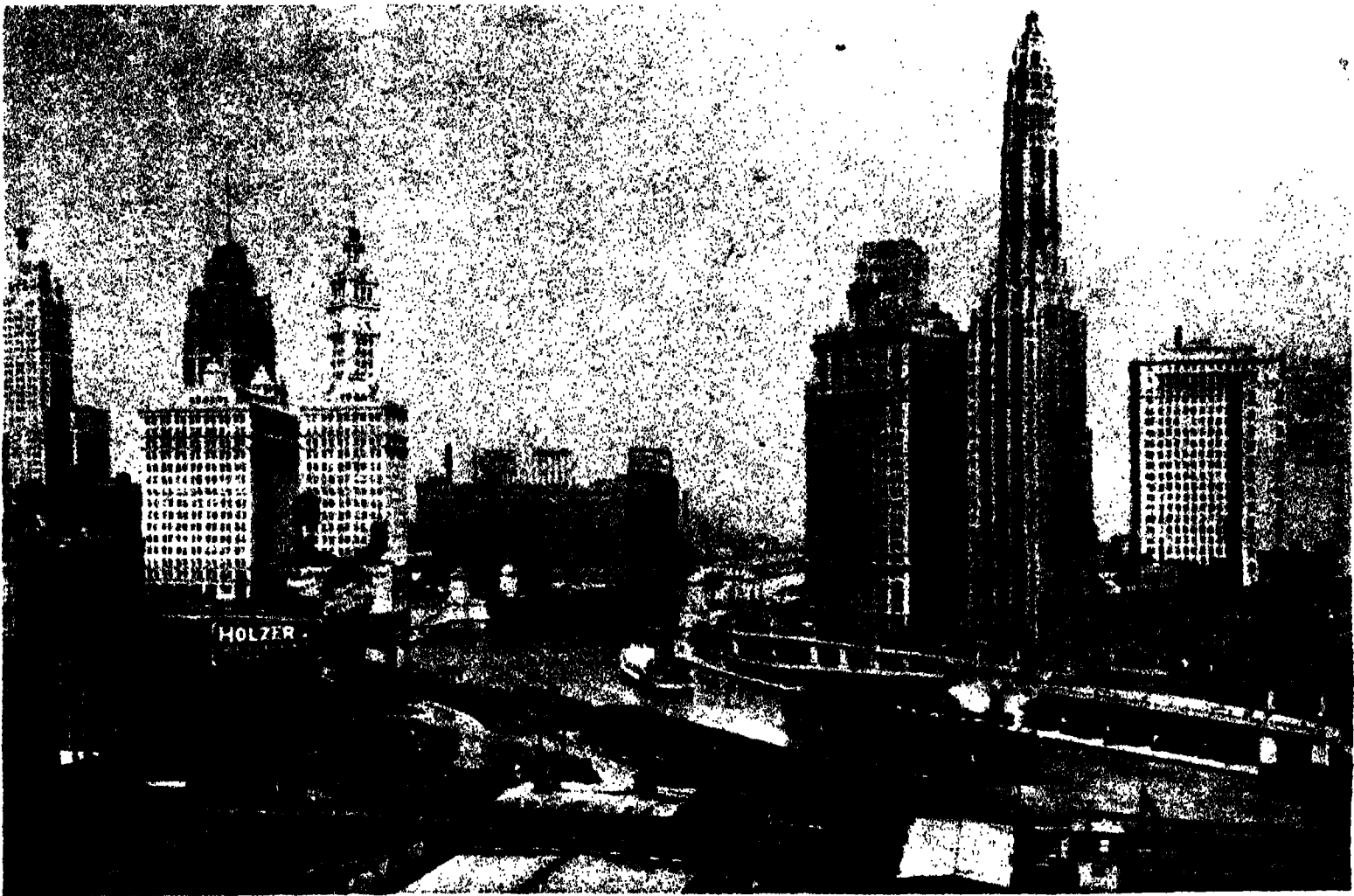
TOWNS AND CITIES



Canadian Immigration Office

WHERE WHEAT IS POURED INTO THE STEAMERS IN A LIQUID CATARACT

In these huge elevators grain is stored pending shipment, and from them it is finally poured in a deluge into the holds of the steamers. This view was taken at Montreal, the capital of the Province of Quebec, the great wheat port of Canada.



E.N.A.

THE FOOD EMPORIUM OF THE NEW WORLD

The site of the World's Fair, Chicago is the second city in the United States. It is a distributing centre of food, with the largest meat and grain markets in the world. As can be seen from this picture, its skyscrapers rival those of New York.

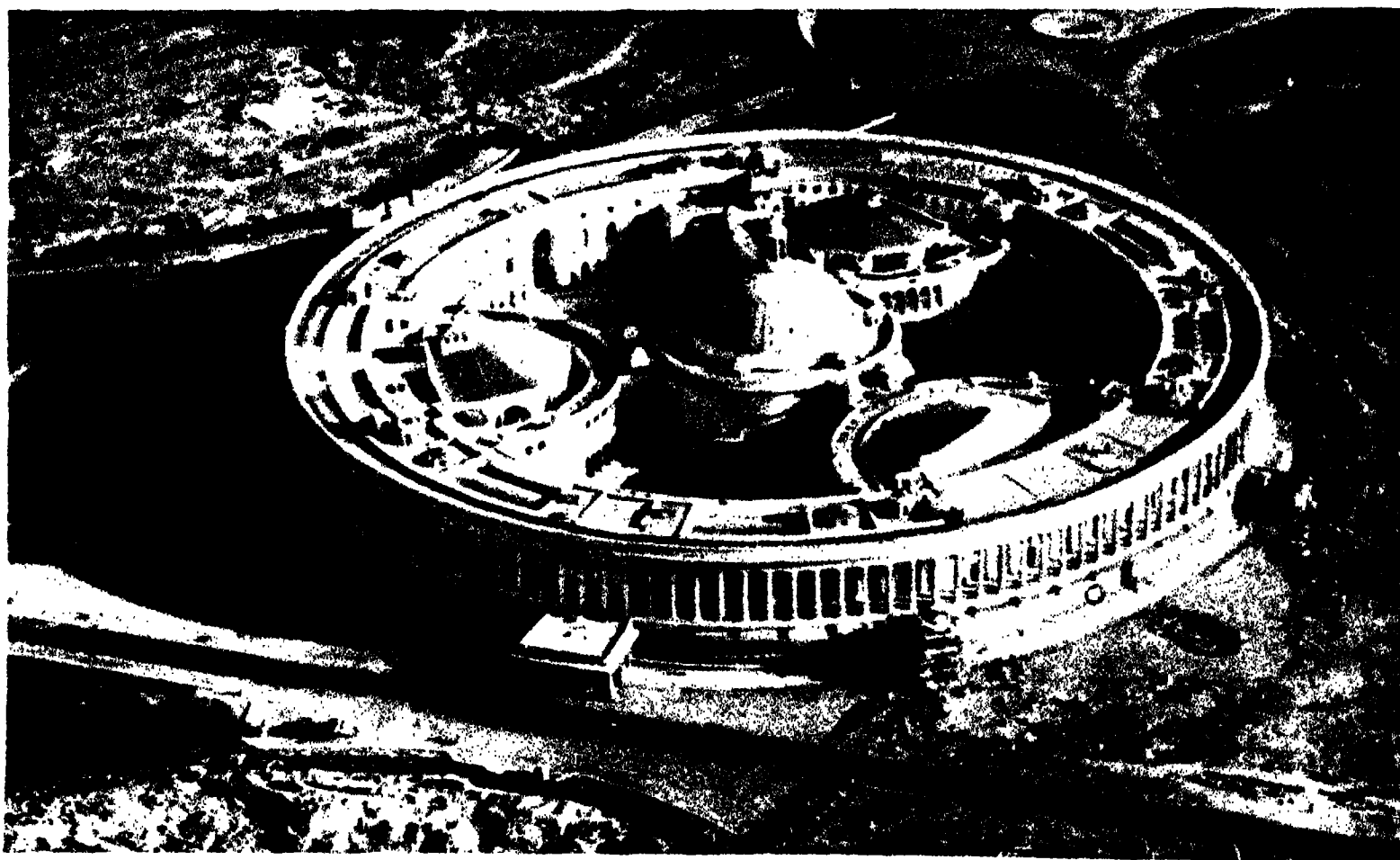
TOWNS AND CITIES



E.N.A.

FIRST PORT OF CALL ON THE HIGH ROAD TO THE EAST

In Marseilles, East meets West, and the races of Europe and Africa mingle in the streets. The Port of Marseilles is built on the nearest spot to the entrance to the Rhone Valley where there is firm ground on the shores of the Gulf of Lyons.



E.N.A.

NEW GLORY OUT OF THE RUINS OF TEN OTHER CITIES

The new Council Chamber of Delhi. The return to Delhi as the capital of India, is a return to a place from which nearly every one of the conquerors of any considerable part of India has ruled—new Delhi is built on the site of ten cities.



Garden Cities and Town Planning Association

SLUMS—THE CANKER OF INDUSTRIAL CITIES

Industrial centres grew up without any plan or attention to the lives and health of the workers, and the poorest quarters degenerated into slums such as these. In certain towns, houses built back to back are still awaiting demolition.

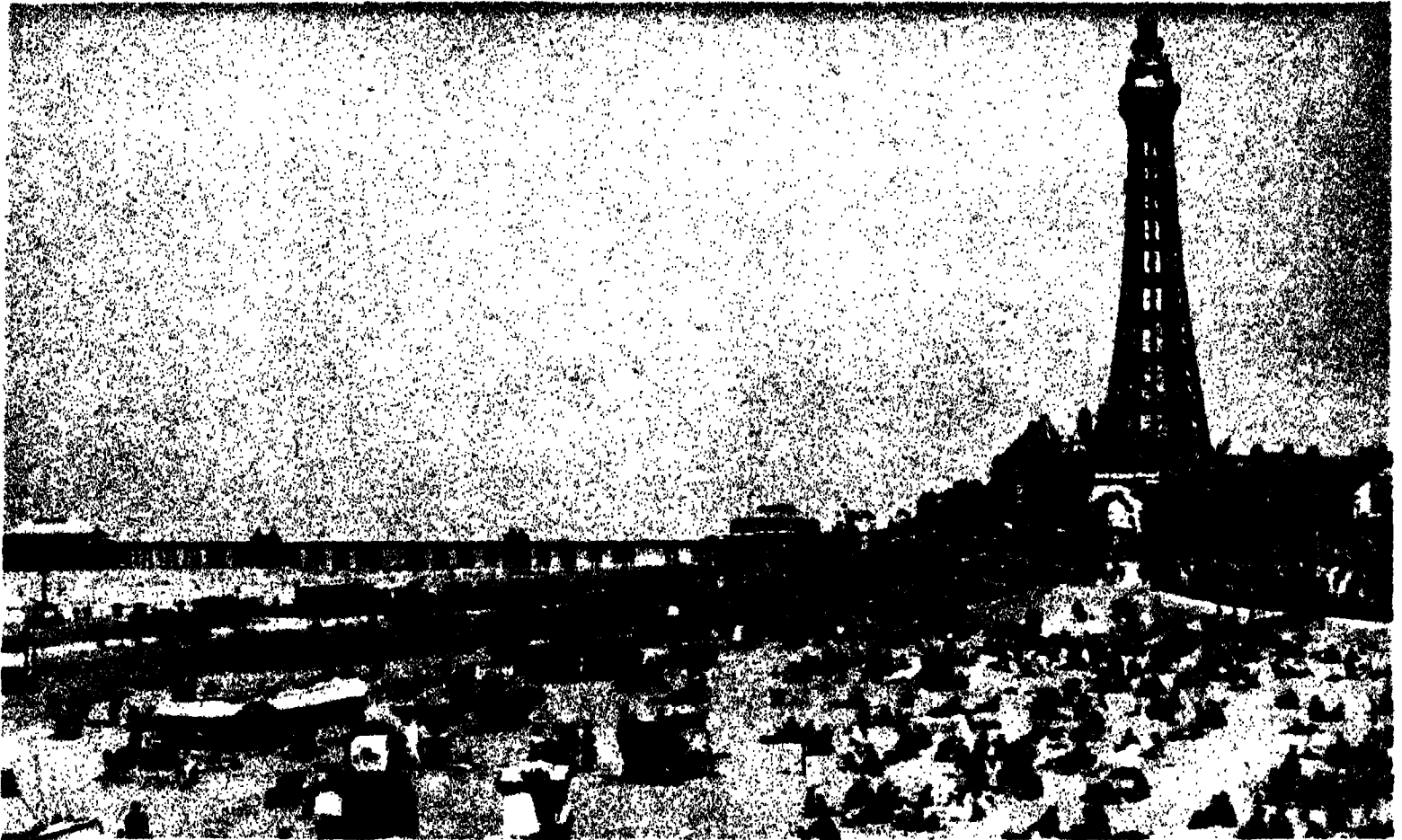


Garden Cities and Town Planning Association

THE CURE—PLEASANT GARDEN CITIES

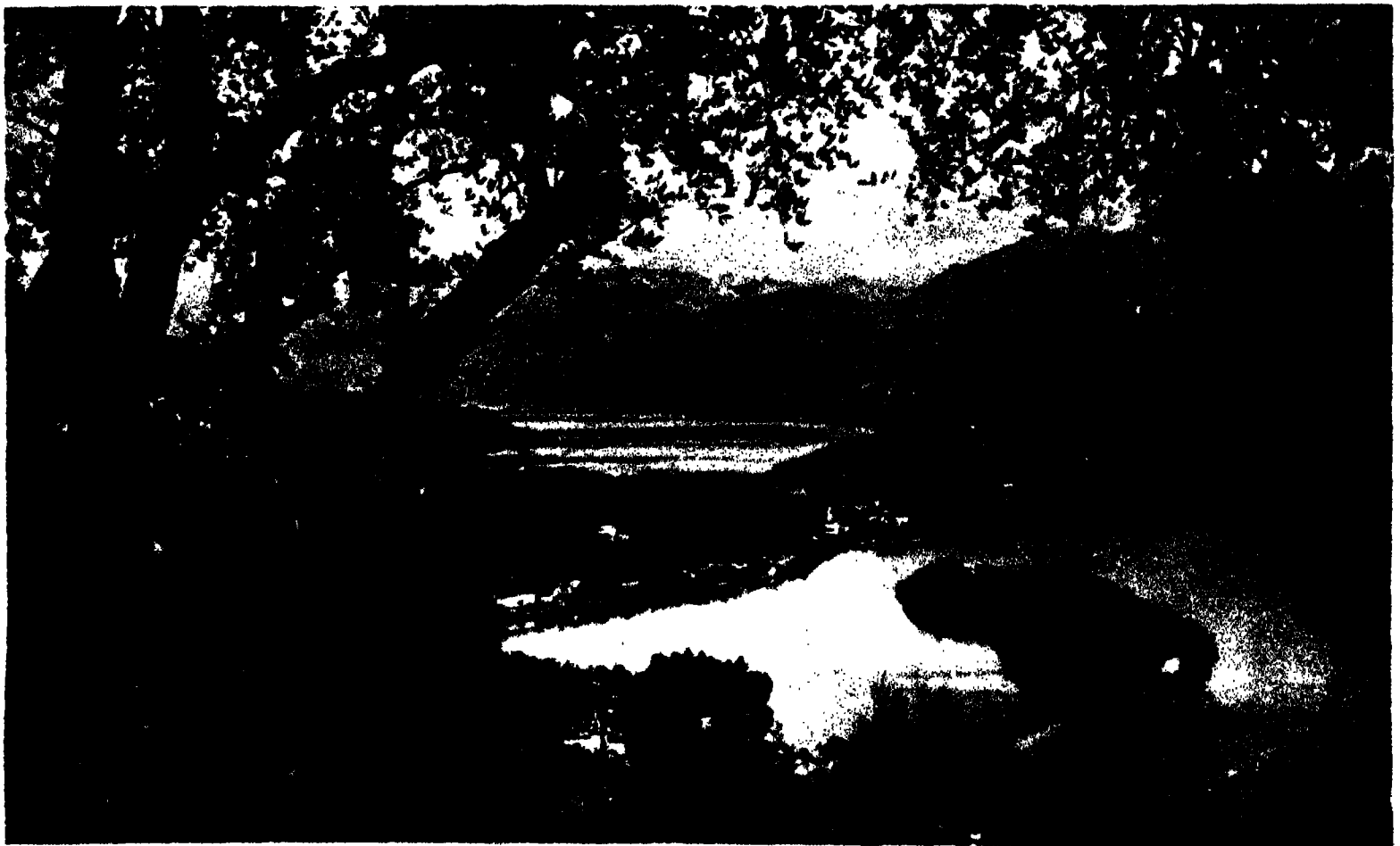
Happily a new outlook prevails and efforts are being made everywhere to pull **down the slums** and to set up new houses, thus raise the standard of living. Hence such garden cities as Letchworth and Port Sunlight, to mention but two of many.

TOWNS AND CITIES



THE PLAYGROUND OF THE NORTHERN WORKERS

Away from the smoke and dust of the town, the workers of the smoky industrial cities escape for a brief spell to breathe the air of the sea or countryside. Some, of course, prefer the gaiety of places like Blackpool, Lancashire's famous resort.



A PARADISE OF SUNLIT WATERS

E.N.A

Others prefer peacefulness and the beauties of nature, found by the jewelled waters of Lake Como in Italy. Such beauty as this might well bring refreshment to the mind and body, needing a spell of relief from the hurry of life to-day.



A STRIKING AERIAL VIEW OF ST. PAUL'S CATHEDRAL

G.P.A.



THE HOUSES OF PARLIAMENT, WHITEHALL, AND TRAFALGAR SQUARE

G.P.A.



G.P.A.

A RIVERSIDE PANORAMA OF LONDON

Our survey of the great towns and cities finishes with a glimpse of the capital of all capitals—London, the hub of the universe, the greatest manufacturing and distributing centre, and the financial headquarters of the world. In this picture we look down from Westminster on the broad sweep of the Thames and on a London basking in a midsummer haze. There is nothing here to suggest the feverish activity of the streets and the thunder of the traffic of the metropolis. Well might we repeat Wordsworth as he stood in the morning silence on Westminster Bridge :

*Dear God! the very houses seem asleep;
And all that mighty heart is lying still!*

WHAT MAN IS BUILDING

IN all periods of architecture the social conditions of a people have influenced the character of their buildings. The great changes seen in recent architecture, both in England and abroad, speak of the changed social order brought about largely as a result of the Great War. In addition to these tremendous changes—changes that have altered the finances of the world—inventions and science have also made progress. Such progress calls for buildings of a kind never required before. For example, until the discovery of wireless, there was no need for Broadcasting House, and until the cinema became so widely patronised architects were not called upon to design cinemas.

Man's building to-day, then, is concerned not only with the all-important question of economy, but also with the provision of buildings to meet new requirements. It is not surprising, therefore, that many of the world's newest buildings are quite different from the older buildings which we all admire. The best among them are sincere in their effort to meet present-day needs, and they reflect our mode of living—our social state—far more truly than those other new buildings which are inspired by tradition and by the masterpieces of an age gone by.

The Race to Keep Abreast of the Times

The present age owes so much to machinery and to the machine-made product that many of the new buildings quite properly use those facilities made possible by the machine. To-day, there are many new materials and many new ideas concerning the lighting and heating of buildings. Medical men, too, have contributed ideas that make modern architects wise as to the hygienic aspect of building. Man's building must provide for plenty of fresh air and sunlight, and up-to-date systems of heating as well as efficient artificial lighting.

During the present age the world of human existence is changing with amazing rapidity. Therefore, the best architects of to-day question the rightness of building very permanently. In the old days the permanent building was intended, and very often did serve, for all time;

yet to-day the likelihood of expansion receives proper consideration. In this way, architects are really serving the community far more than they have ever done before. No more thoughtless waste of money can be imagined than that spent on the hundreds of solidly built, and now too small, old-fashioned schools and institutions that one may see up and down the country.

The Old Style versus the New

Although there are abundant reasons to justify most of the newest buildings, many people, including a number of architects, continue to prefer the old ones. There is a wide division of opinion, and this accounts for the great variety of styles seen in present-day work. There is, of course, a number of architects who are still designing buildings after earlier styles. Undoubtedly, they involve their patrons in the expense of more money than need be spent and give to them buildings less perfect from a utilitarian point of view than is at present generally realised. It must be remembered that many buildings, such as factories and large offices, buildings requiring an abundance of light and air, were unknown in Georgian England, yet many a factory to-day is built to look "Georgian," and in its designs fails to provide that abundance of fresh air and light that every worker should have. Again, we often find the Renaissance building (the classical type, and a very expensive one) serving the needs of a Town Council. Very seldom are these buildings "honestly" built since the architect avails himself of one modern material—steel—and clothes a steel frame with stone-work. This enables him to cheapen the building, yet outwardly its whole design suggests a solid structure.

Many of the younger architects are more in sympathy with the newer spirit of architecture. The Shakespeare Memorial Theatre, at Stratford-on-Avon, is a notable example. Theatres are hardly ever seen standing by themselves, and because of this we **never** think of them as isolated buildings. Yet how ready was everyone to criticise this **theatre** on its bulk alone, little realising that any **cheatre**, unsurrounded by other buildings, would **appear** much the same in mass.

WHAT MAN IS BUILDING

The work of many architects who continue to build according to older designs is often so scholarly and skilled that it is beyond criticism. Though their buildings cannot be regarded as period examples of the twentieth century, but rather as twentieth century buildings of the eighteenth century style, they please us by their scholarship and, like the originals, serve to remind us that Georgian England must have been a period of more settled social conditions. Its architecture was one more of refinement than of industrialism and its attendant activity.

The Leeds Civic Hall is an excellent illustration of a new building built in Renaissance style. In spite of the fact that it is a steel frame building, and therefore somewhat different from genuine Renaissance work, there is no doubt that its considerable beauty will give lasting pleasure to very many people.

The Arnos Grove Station (only one of many new stations recently built for the London Passenger Transport Board) well illustrates a present-day building serving a special purpose since stations of this kind are definitely twentieth century buildings. Simplicity is the keynote of its design, and it expresses its purpose. It uses modern construction to produce its effect, and is highly efficient as a railway station.

No building has been accorded more praise than that given to Stockholm Town Hall. Though some years have elapsed since this great building was finished, people still think of it as a contemporary piece of architecture. By comparison with present-day work, it cannot be called a new building, though its design has wonderfully fresh qualities. The years taken to build it, the manner of construction employed, and the amount of money expended upon it place it in quite another category from the latest European work. For man's building to-day is pre-eminently concerned with economy of

material, economy of time, and economy of money. Industrialism will not wait years for its building, and patrons to-day insist upon economy. Hence the steel-framed building which makes rapid building possible and, at the same time, requires less labour, money, and materials.

No new building could better express the present social order than Shell Mex House, London. In time alone, the Georgians would have taken as many years to complete this as the present-day builders took in months. It perfectly expresses to-day's industrialism.

Another example of foreign work is shown by the new Parliament building, Helsingfors, Finland. Granite, one of the most permanent natural building materials known, is used for this structure. The view illustrating the State Hall gives a good impression of fine materials and clearly shows that very great attention has been given to using these really well. Like the Stockholm Town Hall, this, too, is a great building. Both clearly show that, abroad, industrialism and all it denotes does not manifest itself so completely as it does in England.

Battersea Power Station, designed by one of England's greatest architects, admirably shows a quality of restraint which well becomes present-day work, since, on the grounds of economy alone, the ornate building is very seldom possible to-day.

Liverpool Cathedral, by the same architect, gives us an example which proves that, where a building of great size and of a kind intended to last for ever is concerned, a bow is made to the splendid tradition of English architecture. Many years have already gone to the making of this noble building which is being built stone by stone in a manner similar to that employed by the mediaeval builders of bygone days.

FRANK ROSCOE, A.R.I.B.A.



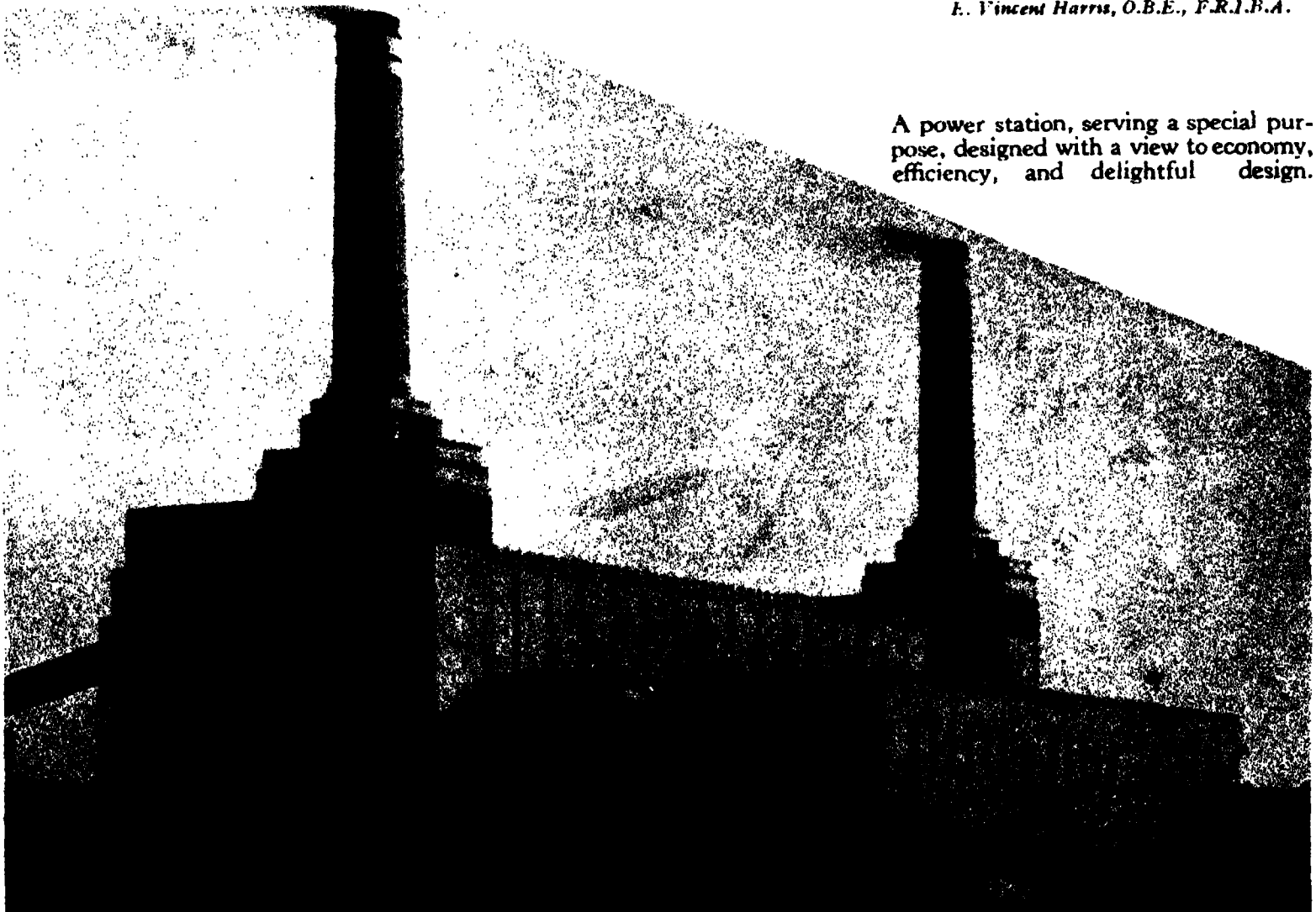
Courtesy, Canadian Pacific Rly.

**LEEDS CIVIC
HALL (1933)**

An example of a modern public building in the style of the Renaissance, but with a steel frame. The new and the old are thus combined to achieve beauty of form with solidarity of structure.



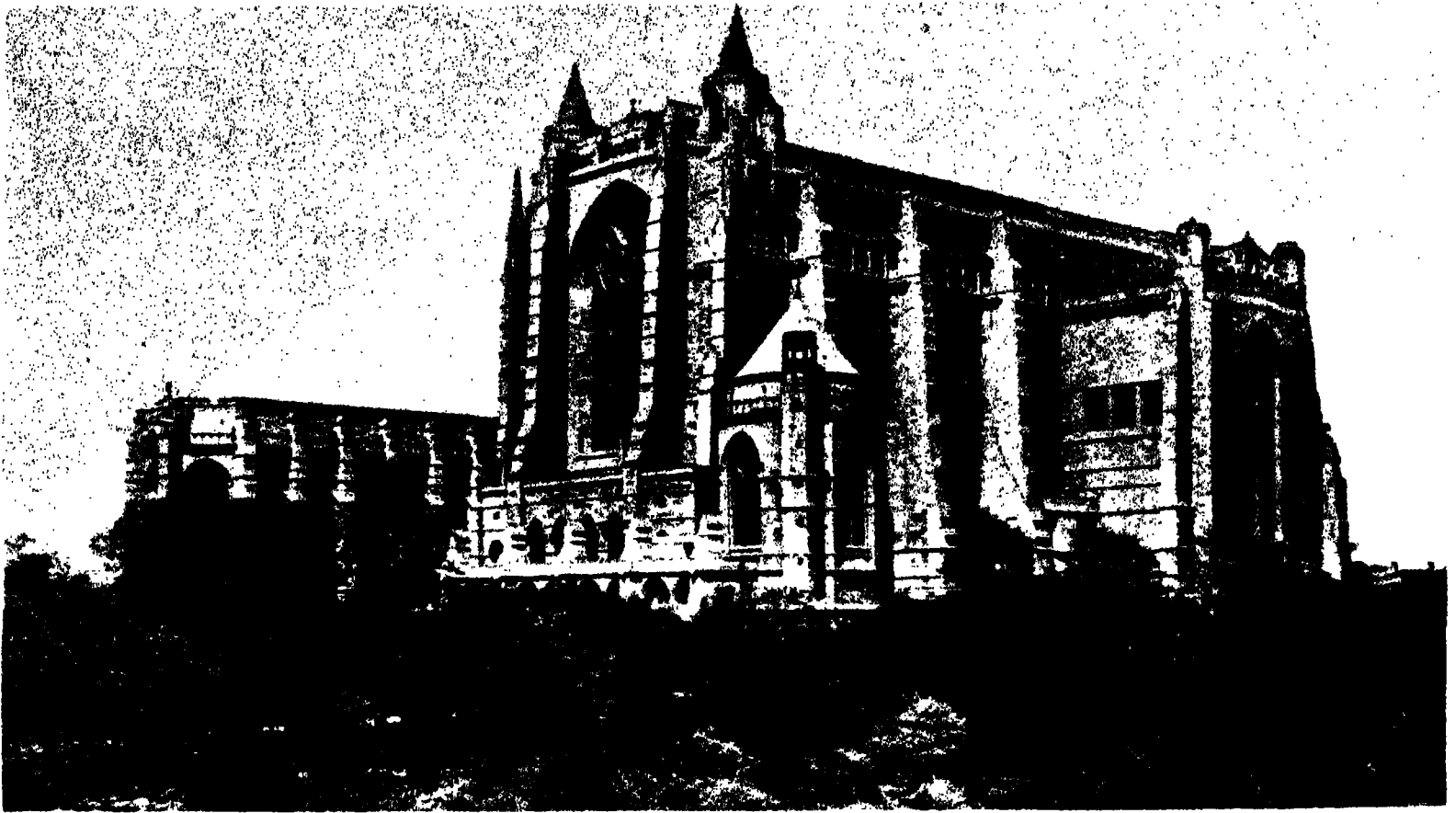
E. Vincent Harris, O.B.E., F.R.I.B.A.



A power station, serving a special purpose, designed with a view to economy, efficiency, and delightful design.

Sir Gilbert Scott, R.A., P.R.I.B.A., "Architectural Design and Construction"
BATTERSEA POWER STATION (1933)

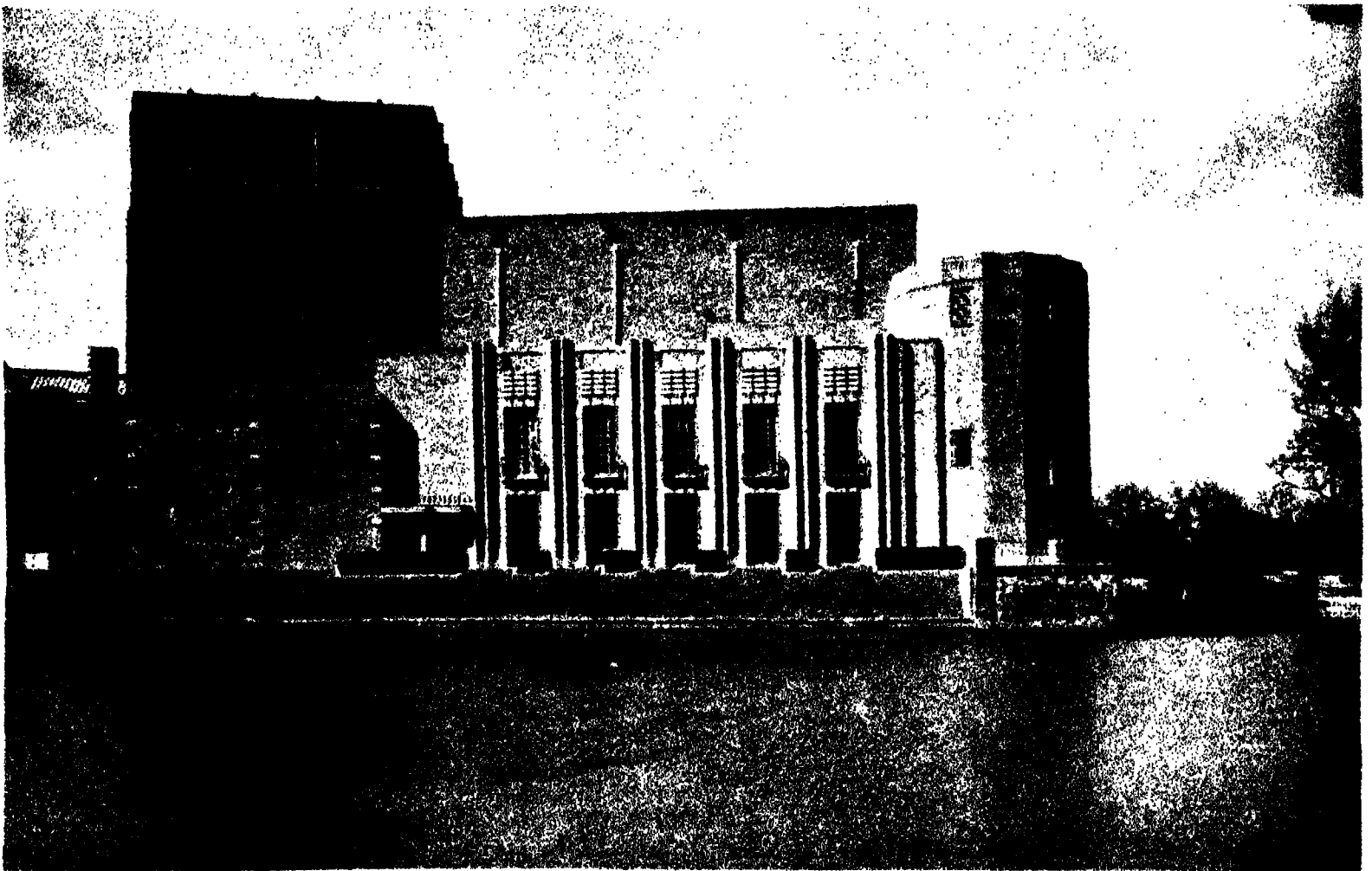
ARCHITECTURE



Sir Gilbert Scott, R.A., P.R.I.B.A., "Architectural Design and Construction"

LIVERPOOL CATHEDRAL (In Course of Erection)

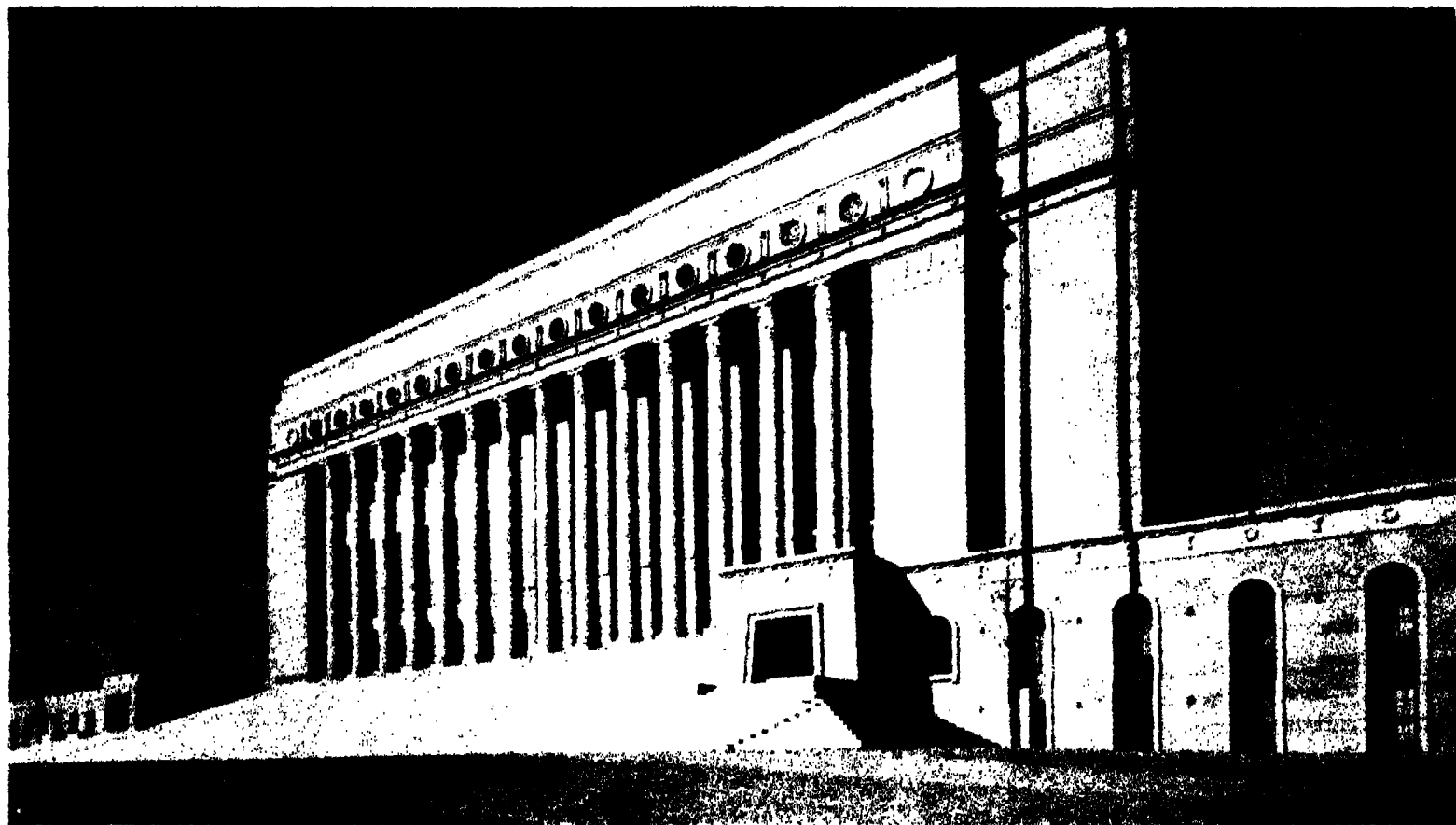
Liverpool Cathedral is by the same architect as the Battersea Power Station on the other page. It is being built in stone in a manner similar to that employed by the builders of our other great cathedrals that have stood through the centuries.



Scott, Chesterton and Shephard, "Architect and Building News"

SHAKESPEARE MEMORIAL THEATRE (1932-33)

Theatres are rarely isolated buildings. Hence this one, which stands alone, on the banks of the Avon, looked rather unfamiliar and was much criticised on account of its bulk. It is built in brick, and was designed by Miss E. W. Scott.



J. S. Sirén, Finnish Tourist Bureau

NEW PARLIAMENT BUILDING, HELSINGFORS, FINLAND

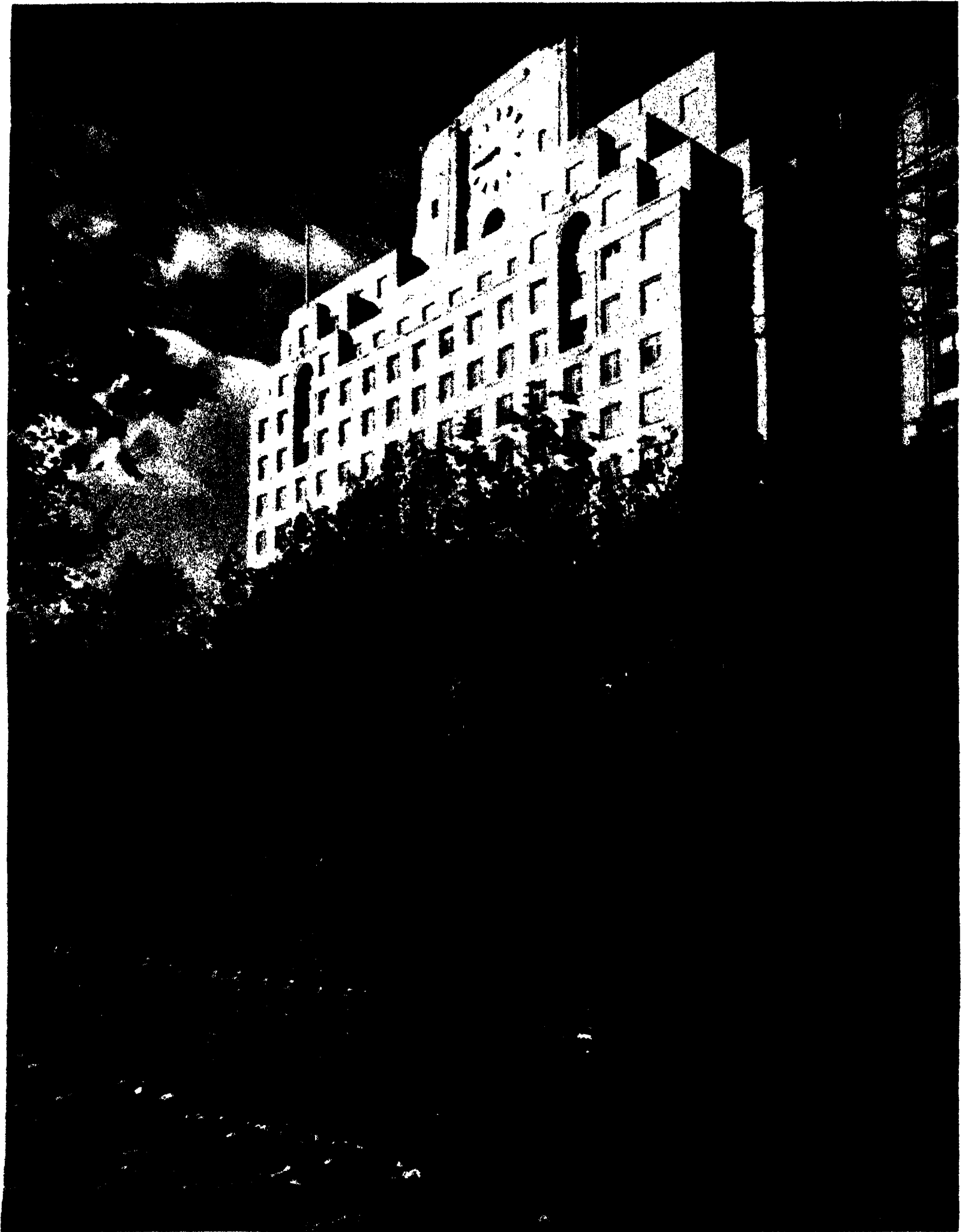
The new Parliament Buildings at Helsingfors, Finland, are of granite. They give a good impression of fine material finely used. What a striking contrast in design these present to the Houses of Parliament at Westminster.



Ragnar Osberg, Swedish Traffic Association

TOWN HALL, STOCKHOLM, SWEDEN

The design of this building, which was completed a few years ago, is, with its wonderfully fresh qualities, regarded as a contemporary piece of architecture. It illustrates the excellent results that can be achieved by the use of brick



SHELL MEX HOUSE

Messrs. Joseph, "The Architect's Journal"

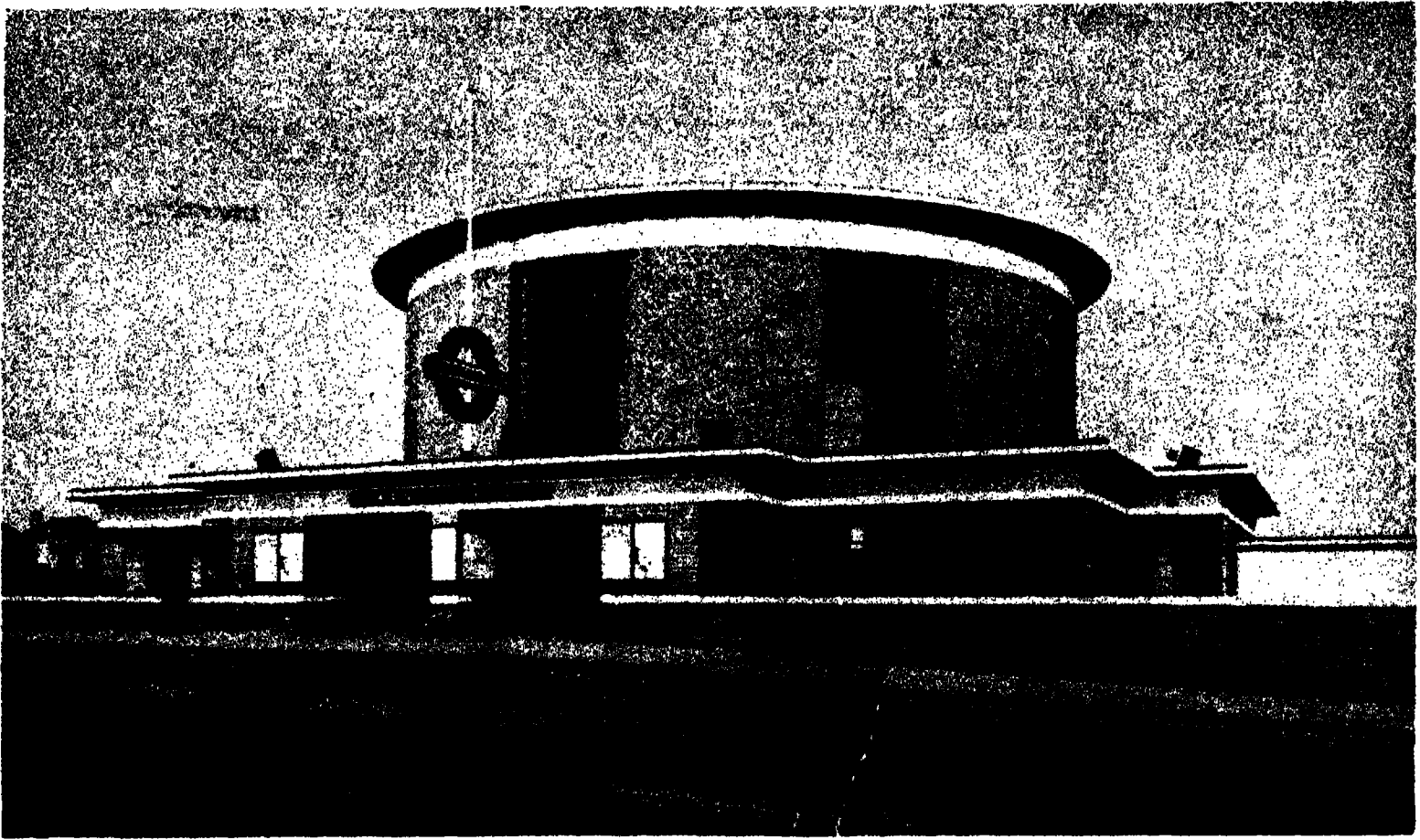
This building took about as many months to erect as a building of similar size would, formerly, have taken years. It is massive, yet precise, and perfectly expresses to-day's industrialism. It gains in beauty in the evening sunlight.



THE HOUSE THAT FOCUSES THE ATTENTION OF THE GLOBE

Broadcasting House speaks and all the world listens. But of those millions comparatively few have seen this splendid original "peninsular" building that houses a nation's voice. It contrasts strangely with the older buildings of Langham Place.

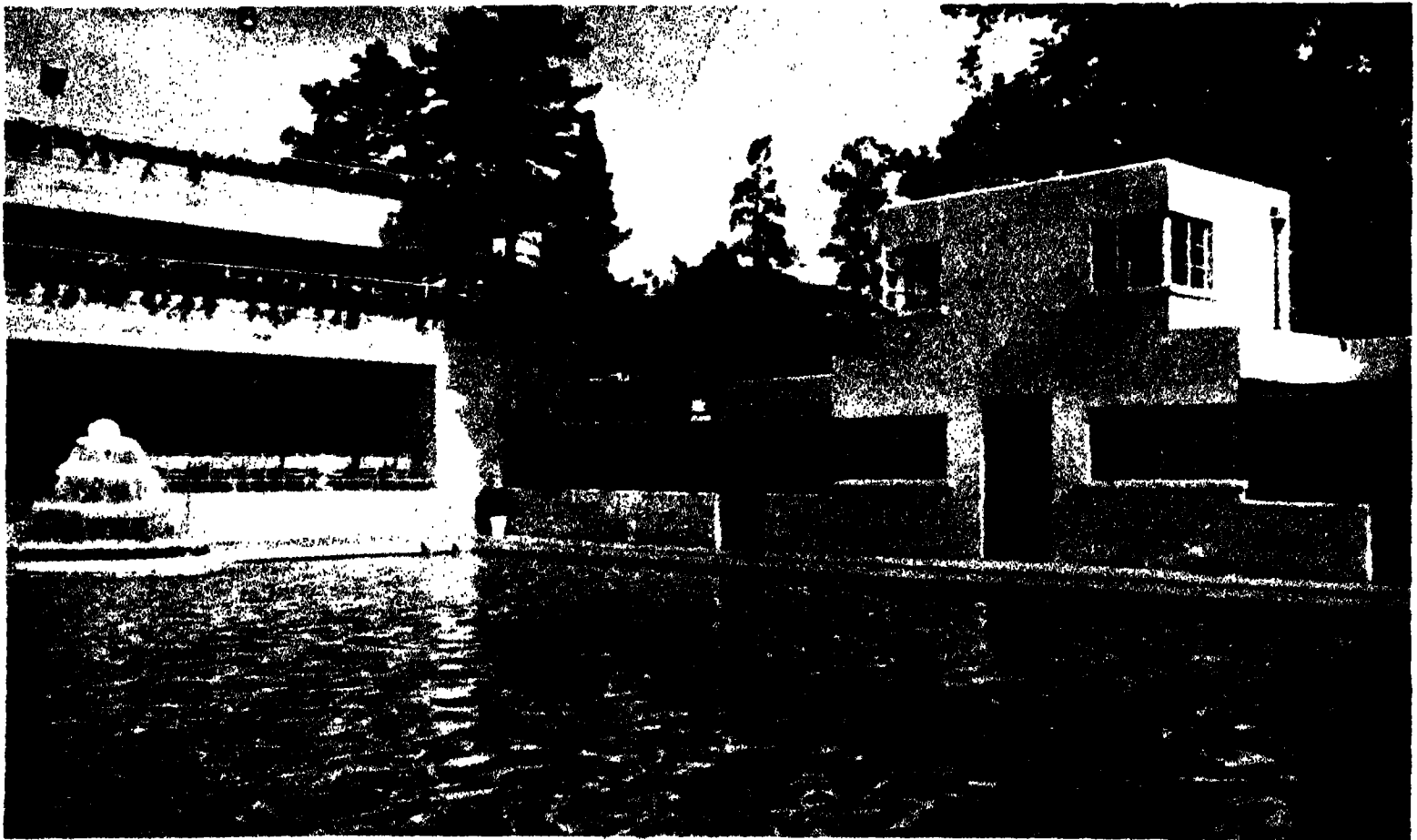
ARCHITECTURE



Messrs. Adams, Holden and Pearson. The London Passenger Transport Board.

ARNOS GROVE RAILWAY STATION (1933)

One of the many new stations, recently built for the London Passenger Transport Board. Simplicity is the keynote to the design. The purpose of the building has dominated the design and nothing superfluous has been included.



"The Architect's Journal"

"SHOW BOAT," A ROADHOUSE AT MAIDENHEAD

Here is an architect's contribution to meet a very modern need; for the new roadhouse of to-day calls for more care in its scheming than the inn of days gone by. The bathing pool is the central interest and in this example it is overlooked by a spacious restaurant (seen on the left). The clean, broad lines of the building well express the method of construction.

NATURE VERSUS MAN

"MAN is the most fragile reed in nature," declares Pascal, "but he is a thinking reed." Thence springs the fund of energy which enables him to exercise his intelligence and thereby influence and modify the world forces by which he is surrounded. Among his chief enemies are those natural agencies over which he can have little, if any, control, though in some cases he can minimise their destructive powers to some degree by measures born of experience and observation.

The Desolation of Earthquakes and Volcanoes

Earthquakes and volcanoes, frequently classed as "Acts of God" because of their unforeseen character, loom largest in human history. It is estimated that more than 1,500,000 lives were lost in Chinese earthquakes from 1038-1920, while Mallet, the father of the science, quotes a conservative world figure of 13,000,000 casualties over 4,000 years. In modern times, the most appalling disaster was that recorded at Tokio and Yokohama in 1923, when the capital of Japan was almost entirely wrecked within the space of five minutes, the total killed and wounded aggregating 250 000. Innumerable fires sprang up all over the city, fanned by a typhoon gale, and increased the destruction ten to twenty-fold. The damage to property, in this instance, was not less than £900,000,000. What of the economic consequence? At one fell swoop, the supplies of food, fuel and clothing for millions of people were cut off with results too terrible to dwell upon.

Of European catastrophies the Lisbon earthquake of 1755 in which 60,000 persons were killed and that of Messina in 1908 with its greater death-roll of 100,000 furnish informative data based on scientific observation. While fire is always an added terror, landslides have been known to overwhelm whole villages as in the Kansu disaster of 1920, the most violent shock in history.

Volcanoes, like earthquakes, illustrate the "luck of locality." They occur at intervals all around the Pacific and along the Mediterranean Zone, from Patagonia to Alaska, from Alaska to Japan, thence to New Zealand, forming the so-called "circle of fire." The terrible explosion of Mont Pelée in 1902 annihilated Saint-Pierre with its 30,000 inhabitants. Vesuvius recalls the tragedy of Pompeii; Madeira, The Azores, Stromboli, Etna and Ararat are familiar and terrible examples of past or potential volcanic activity. To a high degree the apparently solid

earth is seen to be mobile, "and the secret of it all is in its heart, forever invisible to human eyes."

The Merciless Floods of China

A number of other hostile agencies places obstacles in man's path and often involves the loss of life and property. To some extent, however, they are subject to control where adequate warning is given. Floods—or water in the wrong place—have often laid a heavy toll on humanity, especially in countries like China where the configuration of the land makes counter-measures well-nigh impossible. Thus the Yellow River must have claimed millions of victims. Its upper courses are fed by melting glaciers which, combined with the heavy summer rains, cause disastrous floods as soon as the river leaves its narrow mountain bed. Thereafter it does not follow any particular channel and increases every year in height owing to the deposition of sediment. Embankments have been constructed, but have given way on several historic occasions. In 1851 the dykes at Kaifeng were forced open, thus causing a new deviation of the river's course, while in 1887 and 1898 literally millions of people lost their lives when the waters swept over the defence works. So the Hwang-Ho has been named "China's Sorrow." Quite recently—in August, 1933—history repeated itself. New havoc was caused in the province of Ho-nan where over 500 villages were flooded and 300,000 people made homeless. Famine conditions soon obtained in the afflicted area as the crops were entirely ruined, and even ordinary clothing could not be procured. Western Shan-si was also devastated, especially the town of Liulin, where 2,000 fell victims to the sudden inundation. At Paoteh hundreds of houses collapsed. Man is powerless to prevent such a visitation: his only hope is co-operation in alleviating the resultant distress which he has to face.

The Havoc Wrought by Snow

Blizzards or Barbers are those intensely cold winds of gale force which fill the air with fine dry snow. They are much less dangerous in our own day than in the past, because man has evolved means of combating their effects. Destruction often follows in the wake of heavy snowstorms. Floods are inevitable when the snow melts and cause widespread damage. Where it is piled into deep drifts by accompanying winds, the traffic on high-roads and railways is frequently dislocated. Contacts by telephone have been cut off for days by the snapping of the

NATURE VERSUS MAN

poles, while whole forests have been irretrievably ruined by snow. There are instances, too, of shipwrecks caused by snowstorms off the coast of certain countries, entailing heavy loss of life. After a heavy downfall in the Eastern United States in 1933, 30,000 men were required to clear the snow from the streets of New York!

Nature's Fireworks—Hail and Electrical Storms

In the same year *hail and electrical storms* raged in East and South-west Ontario, causing £20,000 of damage. Fine hail, which consists of pieces of ice of irregular form, is usually associated with thunderstorms and falls mostly during the warmer part of the year. As the pieces vary in size—often being described as of the size of marbles, hens' eggs or even oranges—it is little wonder that they play havoc with fruit trees, crops generally and window panes. In the Transvaal large numbers of small stock are killed by hail as the storms reach their maximum violence during the growing season. As regards the size of hailstones, it is worthy of note that Robert Taylor, of Hertfordshire, found one 14 inches in circumference (1697), while during the hailstorm of July 13, 1788, which devastated 1,039 French parishes and caused £900,000 of damage, the largest weighed 9 ounces.

A few months ago Calgary had the rare experience of a *duststorm* which darkened the city and covered everything. South Africa also suffers from this disagreeable climatic feature. There it precedes thunderstorms. The fine dust raised by a strong squally wind, develops into an enormously thick cloud blotting out the landscape and penetrating into every corner.

Terrifying Typhoons and Tornadoes

Other winds which are devastating in their effects are the *hurricanes* of the West Indies, the *typhoons* of the China Seas, and the *simoons* of the Sahara. But the worst type is perhaps the *tornado*, so frequent in the Mississippi basin during the early summer months. As much as 200 feet in height, it is not usually more than 10 feet broad, and advances at the rate of 20-50 miles an hour, pursuing a narrow path which is invariably strewn with wreckage. Houses, trees, fences, and churches are either blown down or carried up into the air for a great distance. When the vapour within the central column of the *tornado* is condensed the so-called "water-spout" is produced. Its destructive capacity becomes obvious when it is known that the wind rotating near the centre of a tornado may reach 500 miles an hour, with an upward velocity of

100. As to hurricanes, the most notable in our own day was that of Tampico in September, 1933, when the great northern port of Mexico was almost "wiped off the map."

Avalanches, or masses of snow and ice which roll down the slopes of high mountains, often occasion great devastation. Owing to its suddenness the drift or powder avalanche often suffocates men and animals and overturns houses by the compression of air. Another form, the ground avalanche, resembles a landslide, for whole tracts are separated and hurled down the precipices with terrific force into the valleys, causing untold damage to forests and houses. The ice avalanche is detached from a glacier and thunders down the steep mountain face mostly in July, August and September. In nine great Alpine avalanches on record between 1518-1879 there was a total loss of 447 lives. The worst was in 1827, when the village of Biel, with its 88 inhabitants, was swept away.

Landslides and Icebergs

Landslides also arouse terror because of their suddenness. In 1881 the village of Elm in Glarus was overwhelmed with a loss of 200 lives. Six years later at Zug twenty-seven houses and eleven people were carried right into the lake. Minor landslides are a matter of everyday experience in railway cuttings, but, since it is known that they may occur, suitable precautionary measures can be taken. Natural landslides overwhelm almost before their victims realise the terror that is come upon them.

Of *forest fires*, *drought*, *famine* and *insect pests* little need be said. Mostly they are now within man's control. Locusts, of whose ravages the prophet Joel gives so vivid and accurate a picture, have still the power to desolate a whole countryside. Recently they wrought great damage in South Africa. Fortunately the locust must disappear before advancing civilisation. That is happening in South Africa.

Those floating mountains of ice which we term *icebergs* have always been a serious source of danger to ocean-going traffic, especially between England and America. Many a ship has gone to its doom by hurling itself unwittingly against one of them. Fogs, which some sailors interpret as a warning, intensify the peril. Not even the most modern vessel can cope with icebergs. Public memory recalls with sadness the appalling disaster of the *Titanic* which went to the bottom on her maiden voyage after striking an iceberg at full speed. April 15, 1912, when 1,513 persons lost their lives, is one of our most tragic anniversaries. Nature had laughed man to scorn in the hour of his triumph.

EDWIN CARTER.

NATURE VERSUS MAN



WHERE HOUSES SINK INTO THE EARTH

E.N.A.

Although man has invented machines for recording earthquakes thousand of miles away from the scenes of their devastation, he has found no means of preventing them. In Japan and the Pacific generally, earthquakes are constantly occurring. This picture was taken in Japan after a great earthquake, at Nitask, where numerous houses sank almost out of sight.



FIRE FOLLOWS EARTHQUAKE AND TIDAL WAVE

Sport and General

The Japanese town of Kamaishi burst into flames after it had been devastated by earthquake and tidal wave in March, 1933. Half the town was burnt down, hundreds of people being killed and thousands injured in this catastrophe.

NATURE VERSUS MAN



G.P.A.

NATURE'S SAFETY VALVES THAT DESTROY CITIES

The centre of the earth is a mass of gases struggling for an outlet. In certain parts of the world these gases have forced their way out, forming burning volcanoes. The one in the picture is in Java—quietly smoking and apparently harmless.



E.N.A.

A VENETIAN SCENE IN CHINA

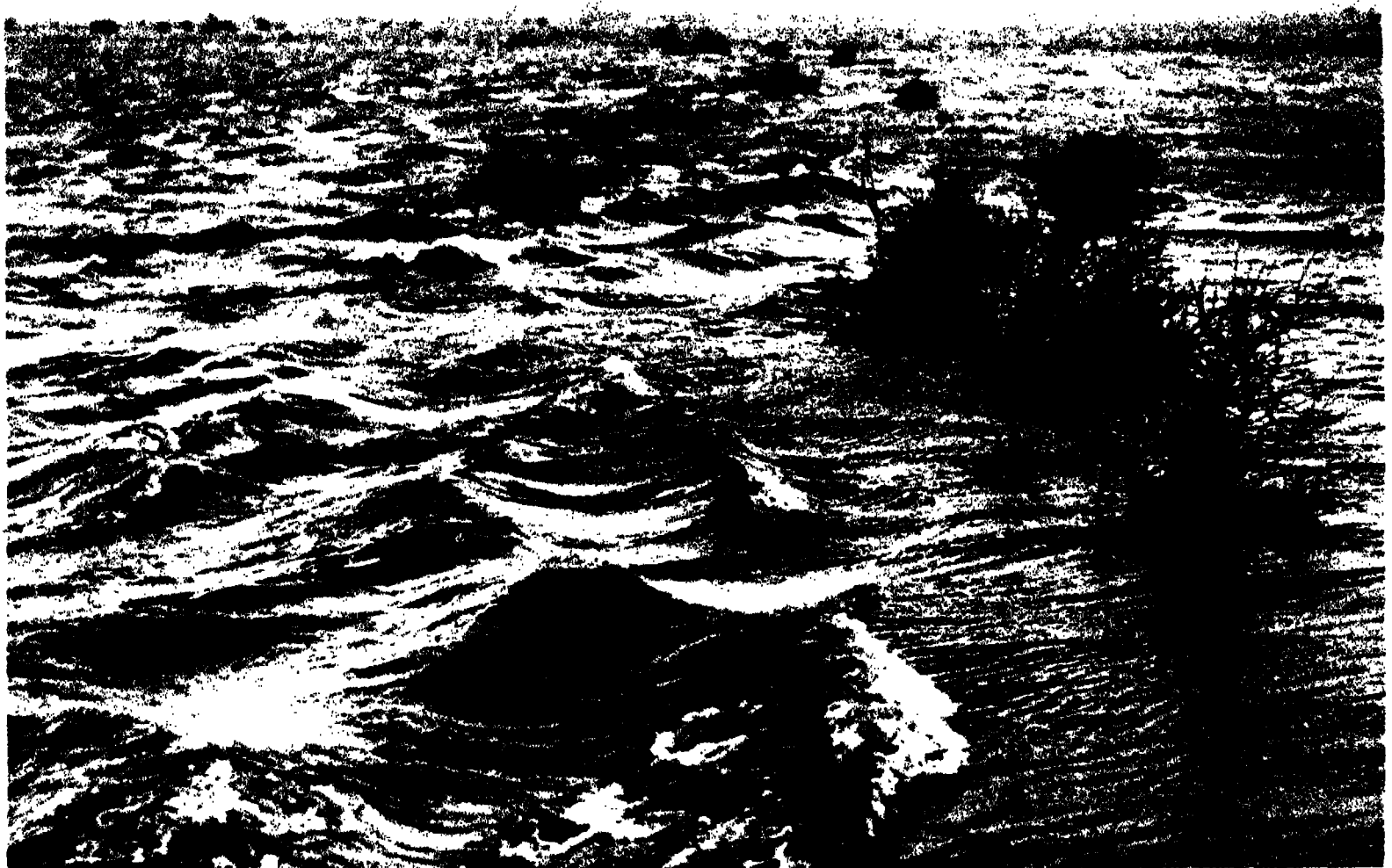
The annual flooding of the Nile means prosperity to the Egyptian farmer, but in other parts of the world floods are by no means a blessing. Here, for instance, we see one of the main streets of Hankow looking more like Venice than China.



G.P.A.

THE "MIRACLE" TIDAL WAVE OF HANGCHOW

The Hangchow Bor is the biggest tidal wave in the world. To superstitious natives this natural phenomenon is a miracle. They travel long distances to see it. It is caused by the narrowing of waters in the bay in front of Haining, near Hangchow.

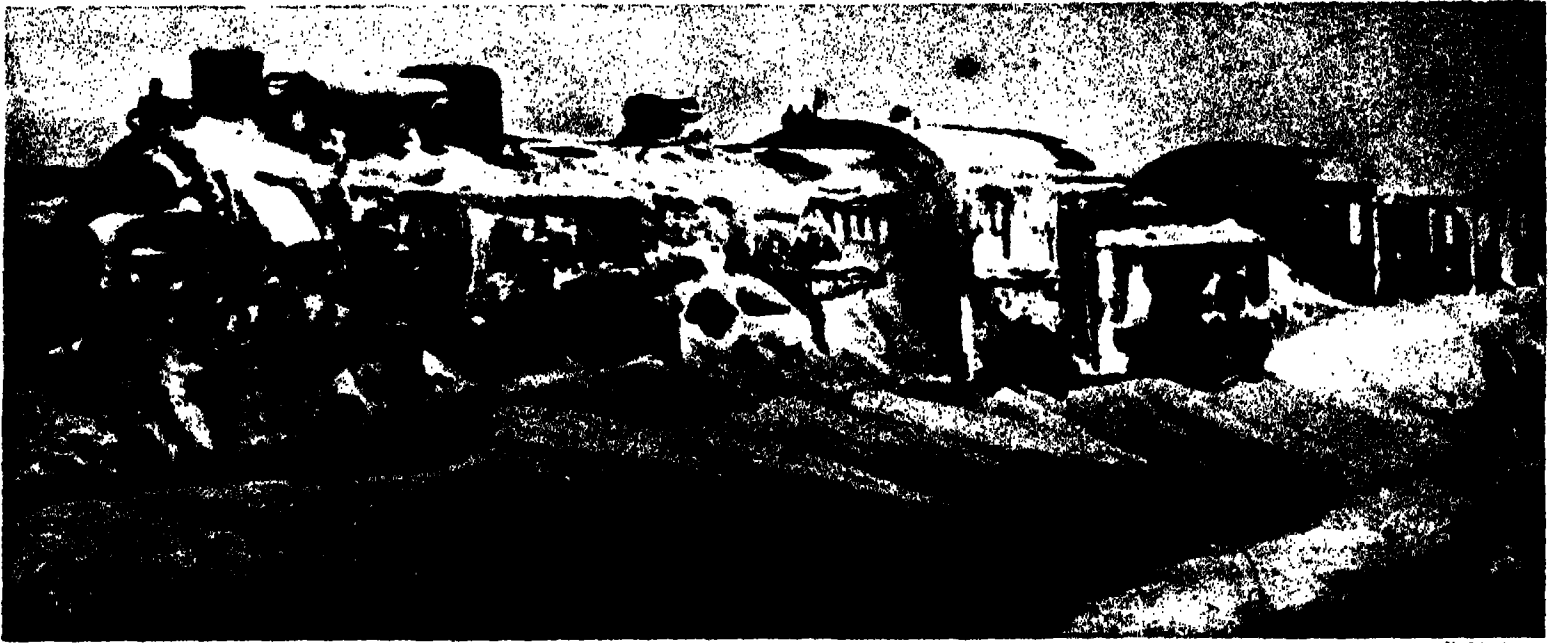


Sport and General

A PART OF YORKSHIRE IN A STRANGE SETTING

Yorkshire, the county famous throughout the world for its wool, and on the drier side of England, is here seen flooded as a result of gales which lashed the Derwent into an angry torrent, overflowing its banks and flooding adjoining fields.

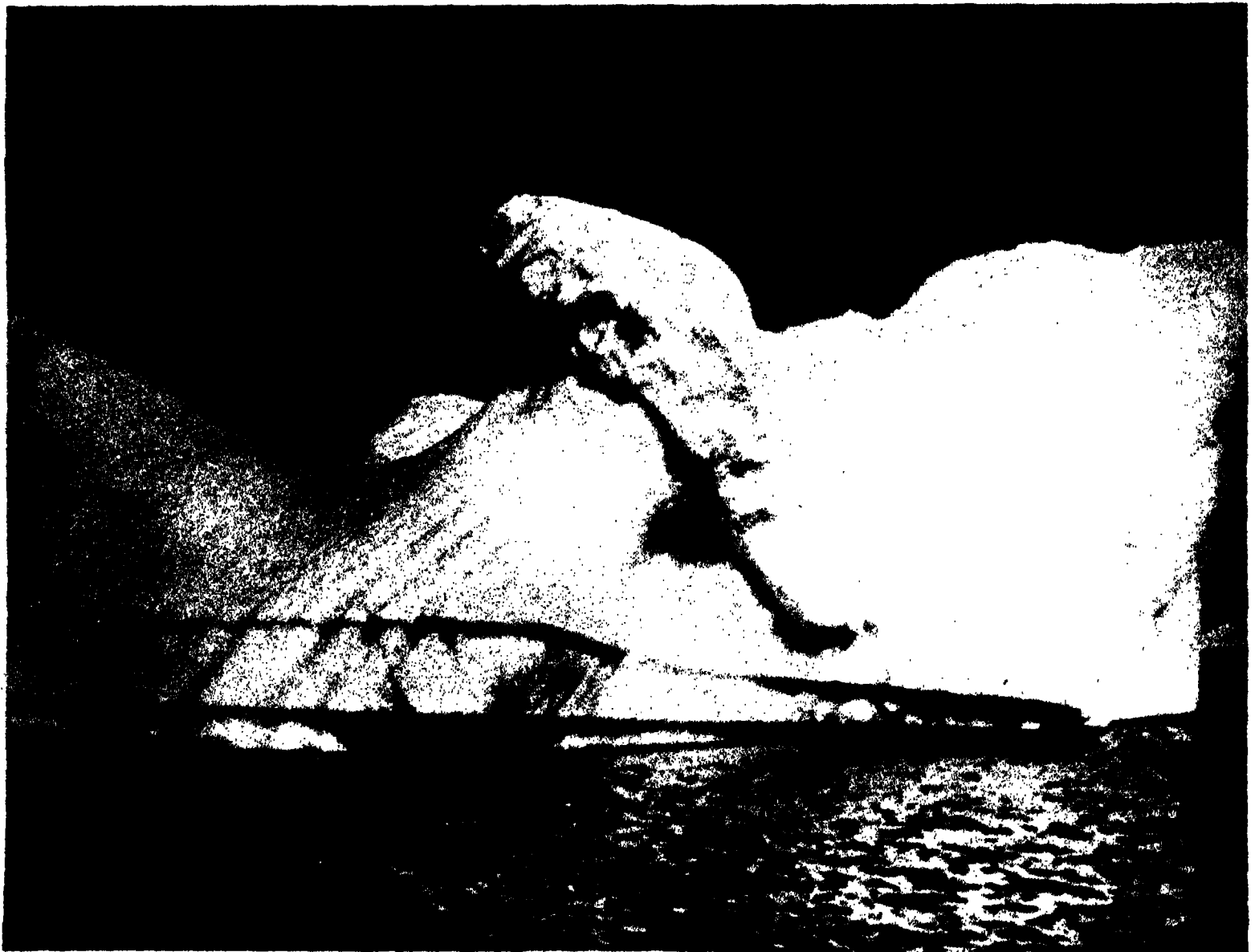
NATURE VERSUS MAN



E.N.A.

NATURE HOLDS UP AN EXPRESS TRAIN

Chinese bandits could not hold up a train so completely as the snow which has brought the Orient Express to a standstill a hundred kilometres from Istanbul (Constantinople). The snowfalls are so heavy, that no devices attached to the engine can clear a path for the train, since the temperature is so low that the snow freezes into huge solid blocks.



G.P.A.

A GIANT ICEBERG IN THE FROZEN NORTH

This is one of the most remarkable pictures of an iceberg ever taken. We see thousands of tons of ice on the point of being hurled into the sea by the momentum of its own colossal weight. Only one-fifth of an iceberg is seen above the water, the remaining four-fifths being submerged. The biggest liner would be smashed to bits if it struck an iceberg even half this size.



LIGHTNING PLAYING OVER A CITY

E.N.A.

Nature presents few more wonderful spectacles than a display of forked lightning, such as this seen playing over the city of Leipzig. Each of these streaks is attempting to find the quickest way to earth, and lightning conductors serve the purpose of assisting this, since electricity will always take the line of least resistance. The lightning is thus rendered harmless.

NATURE VERSUS MAN



F.N.A.

A CLOUD OF SAND THAT TURNS DAY INTO NIGHT

There are few more uncomfortable experiences than a sandstorm. Small particles of sand of which the deserts are composed are whipped by the wind into a thick cloud of millions of minute particles which darken the sky and hide even the searching rays of an eastern sun. Everything is covered with sand, and often an epidemic of dreaded dysentery is caused.



Sport and General

WHEN NATURE LAYS BARE MAN'S PRIVACY

Earthquakes, unless very serious, seldom cause as much damage as tornadoes, one of the results of which is seen in the above picture. This street in St. Louis, U.S.A., looks as though a giant knife has cut right through these homes, leaving little but derelict shells. It is fortunate that the strength of a tornado is concentrated into a comparatively small area.



THE APPROACH OF A DREADED TORNADO

E.N.A.

Could anything be more terrifying than the approach of this giant of the skies? Will it disperse or break with all its fury over some peaceful town or city? In this picture a tornado is seen approaching a town in North Dakota, U.S.A.

NATURE VERSUS MAN



E.N.A.

A STRIKING CONTRAST—DROUGHT IN INDIA

In countries such as India or Egypt, the whole of life depends upon the regularity with which Nature provides sunshine or rain. If in any year rain does not fall at the right time, or in too small quantities, the life-giving rivers dry up, and there is no water available for man, beast, or crop. Here is a scene of desolation following a drought in the neighbourhood of Poona, in India. The cow is standing in what in normal times would have been a running stream of crystal clear water.



Sport and General

"... THOSE IN PERIL ON THE SEA"

The sea, calm, restless or in angry mood, has inspired poets and writers of all ages. It is so like the story of man's endeavour—the incoming tide his success and the outgoing tide his failures, and storms his many calamities. Every year the sea claims many victims, and on the beds of the oceans rest billions of man's wealth, only a small proportion of which he has ever been successful in recovering. This picture shows how terrible the sea can be in its furious moods.



E.N.A.

A PLAGUE OF LOCUSTS IN ALGERIA

The passing of a plague of locusts leaves desolation in its wake. Billions of these small creatures form a dense moving cloud. This remarkable picture was taken in the Atlas Mountains, and shows a swarm which has settled. After such a visitation, not a blade of grass or a leaf of a tree or shrub will remain—they eat everything and leave a desert behind. No one knows from whence they come or where they will go next. Wherever they settle they cause desolation.

NATURE VERSUS MAN



FOGS THAT BRING CITIES TO A STANDSTILL

Sport and General

Man has conquered many of Nature's forces, but he has not yet succeeded in defeating fog. The increasing use of electricity in home and factory is lessening the number of "black" fogs, but those caused through atmospheric conditions are still the fear of seamen and the winter curse of cities. Fogs are extremely costly in the disorganisation they cause in vital services.



E.N.A.

THE ALPINE CLIMBER'S DREADED FOE

When the sun melts the snow on the mountain tops, the underneath layers are loosened and millions of tons of snow begin to move. If the incline is particularly steep, the first slow movement soon develops into a mighty rush, in which huge boulders and trees are swept along in a mad effort to reach a lower level. Here we see an avalanche on the famous Jungfrau.

NATURE VERSUS MAN



E.N.A.

A VILLAGE THAT WILL BE NO MORE

The terrifying effects of avalanches are clearly seen in this remarkable picture. Constant landslides menace the little village of Kilchenstock, in Switzerland, with utter destruction. The white line marks that portion of the town where houses have already been engulfed, and yet the villagers still cling to their homes in the fertile valley, defying the mountain.



Associated Press

WHEN FORESTS BECOME A RAGING FURNACE

Nature will speedily fan a spark into a forest fire raging for hundreds of square miles, reducing noble trees to a heap of charred ashes, as the flames lick along the parched ground, and greedily devour the fuel of dry wood and leaves. The suddenness of the forest fire constitutes a grave peril and human endurance is taxed to the uttermost in such crises.

MAN VERSUS NATURE

THE history of civilisation is the story of the different ways in which man has adjusted himself to the conditions in which he lives. We have already shown, in earlier sections of this book, with what degree of success he has grappled with his difficulties so far as the provision of food, clothing and shelter are concerned. The secret of that success has depended, not upon any defiance of the laws of Nature, but upon the strictest obedience to them.

In the last section we have taken account of certain natural happenings which he is, in some cases, powerless either to prevent or withstand. He cannot outlaw the earthquake or bottle up the volcano. At the same time, as he advances in the scale of civilisation and learns more of the nature and action of the forces with which he has to contest, he obtains an ever greater control over his environment. For instance, while he may still fear the lightning, he can, to a very considerable extent, ward off its evil effects with a thing as simple as a lightning conductor.

Man Triumphs Over Sea and Land

In many cases he has been more or less helpless until comparatively recent years. In our time, science, and its practical application in machinery, engineering and medicine, have placed in his hands weapons of defence and attack, or, if we prefer to put it another way, agents for co-operation, that have made his life more secure and his material advancement more certain.

From the earliest times he has had to face the influence of uncontrolled water from the sky, the sea or the river. In unwanted quantity and at unexpected times, it has flooded his property, destroyed his flocks and herds, and has caused the loss of thousands of human lives. Where sufficient labour and capital are now available, he embanks the rivers and holds off the sea with breakwaters, dykes and enormous sea walls. He may sleep in peace and safety, but at the cost of eternal vigilance.

He prevents the coasts of his country from being washed away with groins and other works, he directs the courses of his rivers and confines their channels that they may flow as he directs.

Not only does he attempt to preserve the soil that is still under his hands, but he reclaims

immense tracts of lands that were lost to him in the days of his weakness and inexperience. In Holland he has recovered thousands of acres from the very sea itself and, both there and elsewhere, by extensive drainage schemes, has added wide areas of productive soil to the farm lands of the world that once lay submerged beneath the sea.

Reclaiming the Desert

By means of great irrigation works, details of some of which will be found in the illustrations in this section, he has brought fertility even to the desert. In the case of Egypt, the great dam at Aswan, by holding up the flood water upon which the Egyptian peasant depends, prevents waste, and enables farming to be carried on all through the year, instead of, as formerly, during only the period of flood.

Though, as we have said, he cannot prevent the earthquake or bottle up the volcano, he no longer remains entirely pitiful and helpless in the face of their anger. He builds in California and elsewhere, great structures of steel and concrete that may meet the shock and not tumble to earth with the first quaking of its surface; in Japan he sets up bamboo bungalows which do little harm when they fall. On the slopes of Mount Vesuvius the vine-growers erect huts with domed roofs that throw off the stones and ashes that are shot out by the volcano at times of eruption.

Boiling springs may be rendered harmless by canalisation, or even be turned to profit, as in Iceland, by pipes that bring ready-made hot water for washing or heating in factory and home.

Cutting Through Mountains

Man has overcome the obstacles to communication offered by high mountains, by roads that wind like ribbons up and down precipitous slopes, by funiculars that, in a beeline, climb the almost vertical rocky walls, and by tunnels that burrow and twist through the very heart of the massive barriers. The most remarkable of these tunnels are the Mont Cenis, the Saint Gothard, the Simplon and the Lotschberg, in the Alps, and the Trans-Andine tunnel of South America, which, at a high altitude, pierces Aconcagua, the highest mountain in South America.

MAN VERSUS NATURE

The aeroplane, one of the youngest of man's assistants, is now used for showering destruction upon insect pests and fighting forest fires. In Canada the use of aircraft to meet the peril of fire has been developed to a pitch not equalled in any other country. Any whiff of smoke is quickly detected, and it is now a common joke amongst those who live in the forest solitudes that they can scarcely enjoy a quiet smoke in the evening, without bringing about the visitation of an aeroplane.

The Canadian fire service, however, does something more than detect fires: it prevents them. With planes equipped with skis, it patrols the forest areas in the north of Manitoba and Saskatchewan, and extinguishes the embers, left by trappers and fishermen, that might otherwise give rise to serious conflagrations.

Man's Efforts to Control the Weather

Man has not yet obtained much control of the weather. He has tried, in Italy, shooting at clouds to prevent hail falling upon the vineyards before vintage time, or to persuade them to drop upon his thirsty fields the rain for which they are longing. In California he lights fires in the orange groves to keep the air warm and prevent damage by frost. In most countries in the temperate latitudes, he grows, under the protection of glass, peaches, grapes and early vegetables that either would not ripen at all or not so soon if left to themselves under the open skies. Perhaps his greatest success, so far as the weather is concerned, is his ability to forecast storms and other disturbances and, by means of the wireless, to give timely warnings to farmer, fisherman, and sailor.

He has, in part, but only in part, been successful in counteracting evils arising from the existence of noxious or disease-carrying germs. For a long, long time he was defeated by the tiny mosquito. The danger of the mosquito lies not in its penetrating and irritating bite, but in its power to carry the dread disease malaria, the germs of which it communicates to man when sucking his blood. So great was the power of this little creature that, combined with the rat, it put a stop for a long time to the building of the Panama Canal.

When the Americans took over the work from the French in 1902 they began by trying to get

rid of man's three greatest enemies in the canal zone—rats, malaria, and yellow fever. Under the leadership of William C. Georges, 2,000 assistants made a successful fight against these small but nevertheless dangerous enemies.

Waging War on Germs and Vermin

Poison and a special army of rat-killers defeated the rat plague. As the rats came from ships visiting the ports, all the ships were carefully inspected and their vermin exterminated.

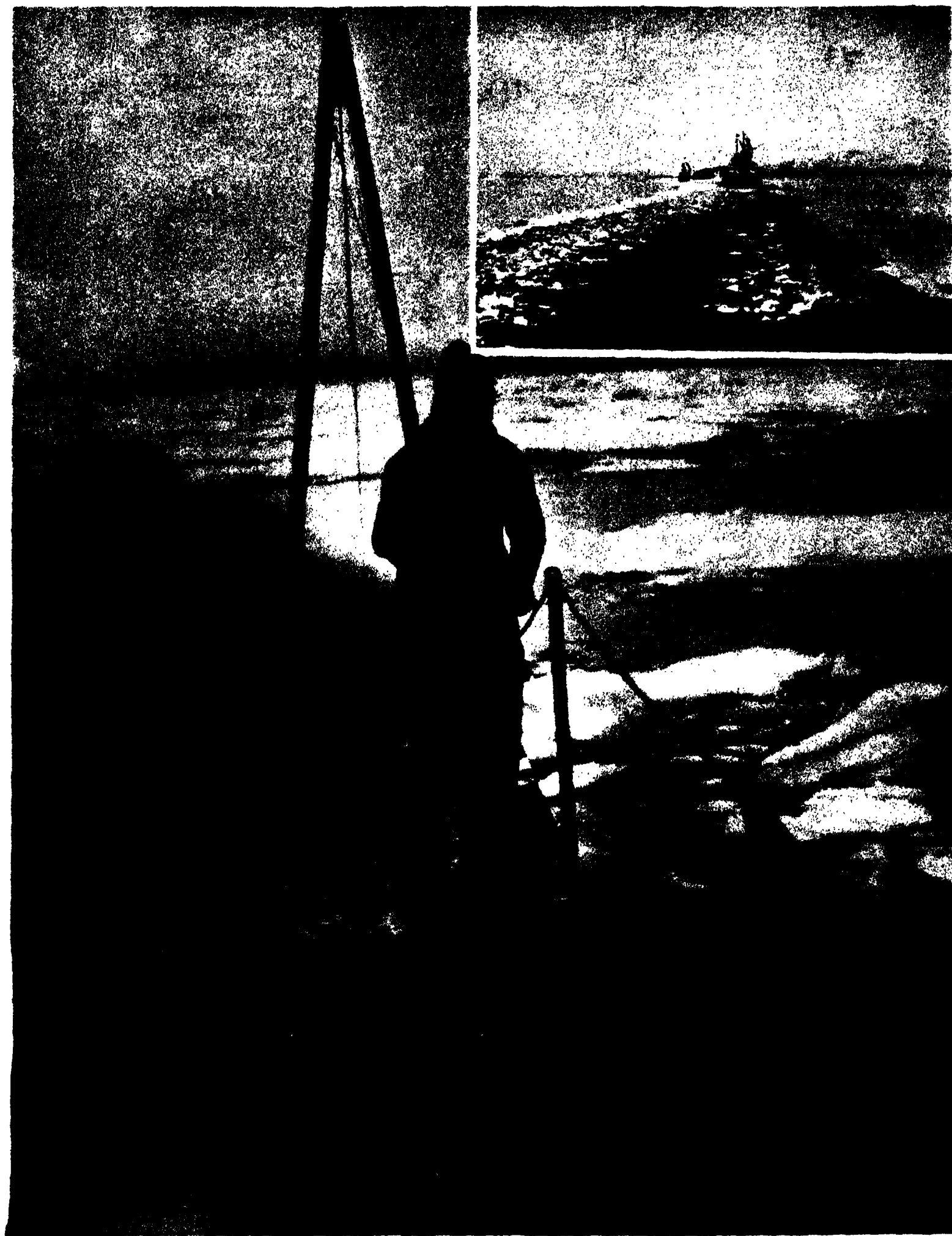
The germs of malaria, a fever contracted in tropical and marshy areas, are carried by the mosquito, and the disease could only be quelled by the extermination of the germ carriers. Mosquitoes breed in stagnant or slowly moving water, where they lay their eggs on the surface. The stagnant water was removed by drainage, oil was sprayed over ponds, etc., to suffocate the larvæ, water tanks were carefully screened, and sufferers from the disease were rigorously isolated. In country districts the jungle was cleared: towns were cleaned up by the introduction of an efficient system of drainage, paved streets, and a regular supply of pure water.

As yellow fever is also spread by the mosquito, the measures adopted to defeat malaria were also effective in the war with this disease. Thus, by careful organisation, research, and the expenditure of millions of dollars, the Canal Zone was rendered healthy and the work of construction was able to proceed. To-day this area, once so deadly, is far healthier than any other lands in this part of the world where man has not yet emerged supreme in his conflict with Nature.

What of the Future?

It would seem that man is indeed waging an ever increasingly successful war against the hostile forces of Nature. But yesterday the sea could encroach at will, the desert, the jungle were impenetrable, mountains and oceans were insuperable barriers, pestilent germs claimed their victims in millions. Will a day dawn when man will have completely subdued Nature—when he will have harnessed the tides for his service, when he will draw rain from the sky, when he will have established command over tempests and earthquakes?

E. W. RICHARDSON, F.R.G.S.



G.P.A. & E.N.A.

AN ICE-BREAKER CLEAVES THE WAY FOR SHIPS

Ice fields are not only found at the North and South Poles, but also along the Baltic coast, where they interfere seriously with shipping. The ice-breaker, with its pointed bows, ploughs a channel through the ice (seen clearly in the inset), through which ships can pass freely. These channels soon close up unless the ice-breaker is continually at work breaking up the ice.

MAN VERSUS NATURE



E.N.A.

FOUNTAINS OF SNOW FROM A RAILWAY PLOUGH

Through the wildest district of the Pyrenees runs a recently opened electric railway to the pilgrimage church of Nuria, visited annually by thousands of childless women. It is only with the aid of such powerful ploughs, as the one illustrated, that the track can be kept free from the deep, frozen snow, which would otherwise make it impossible for trains to run.



E.N.A.

HEATING AN ORANGE GROVE WITH STOVES

You would not think that a stove in the open-air would help to raise the temperature much, but a long line of smoking chimneys like these is just enough to protect the Californian orange groves from the frost that would spoil the fruit.

MAN VERSUS NATURE



E.N.A.

WHERE ONE MAN GUARDS THE SAFETY OF 125,000 SQUARE MILES

Here is a "fire-spotter" in his cabin on the summit of a peak 7,250 feet high in South Dakota, U.S.A. With his delicate instruments he can see 200 miles in each direction. When he spots smoke through his "fire-finder," he finds its exact position on the map and telephones at once to the foresters of that section to warn them of the outbreak of fire.

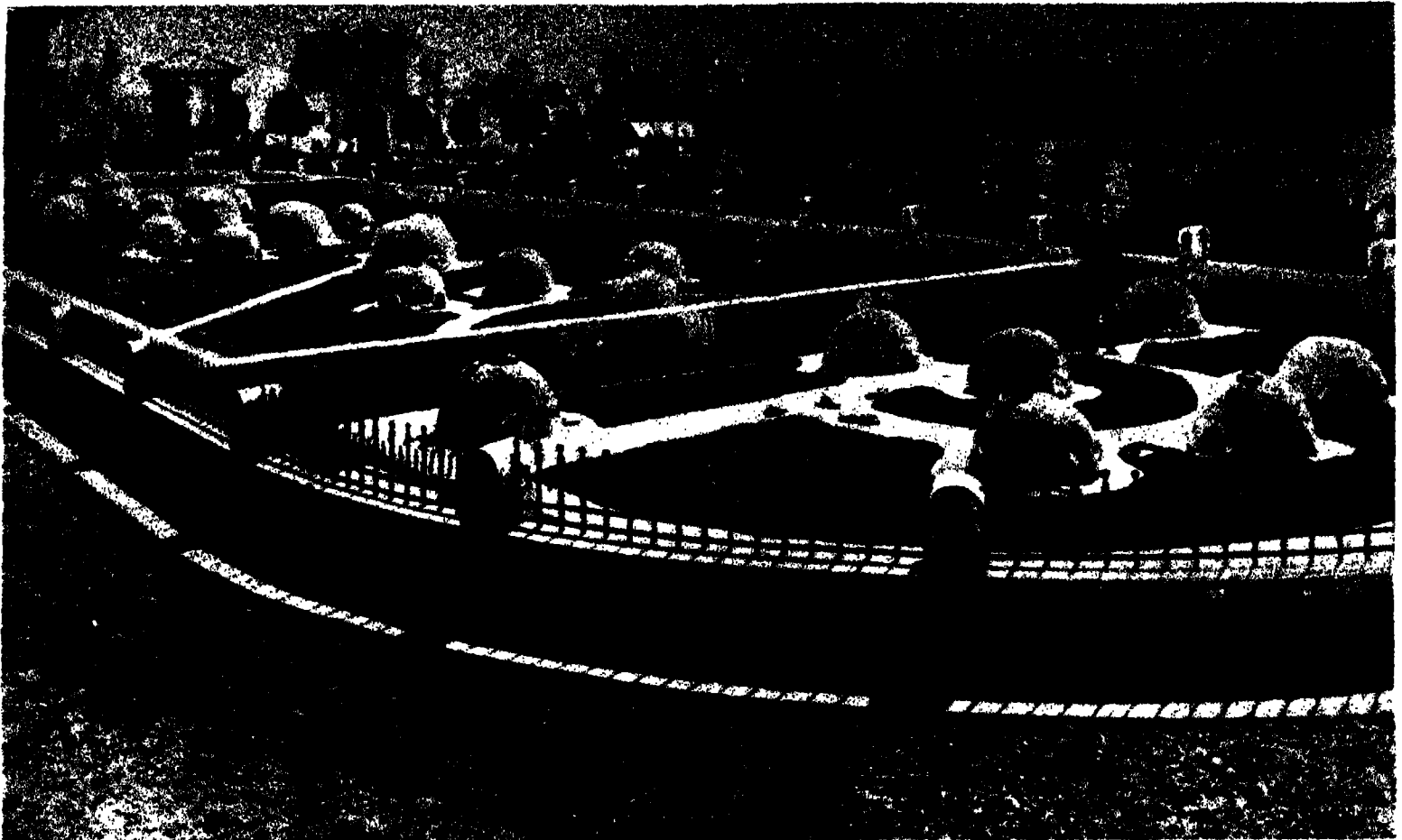


E.N.A.

STEMMING THE STREAM OF FLAMES ON THE FOREST'S BED

The United States Rangers in the picture are working on a "fire-line." They clear away all the brushwood and debris to prevent the flames from running along the ground and spreading, thus preventing the destruction of vast forests.

MAN VERSUS NATURE



E.N.A.

A FARM FOR SNAKES IN BRAZIL

Snakes are an ever-present peril in the tropics. The Brazilian government, therefore, maintains a snake farm in the state of Sao Paulo where poison is extracted from their venomous jaws and used as an anti-toxin to cure dangerous snake bites.



E.N.A.

STEMMING FLOODS ON THE MISSISSIPPI

This strange sea-wall, with its fine motor drive more than two miles long, was built to prevent the great damage caused by the flooding of the Mississippi river in America. Floods cause millions of pounds worth of damage in many parts of the world, and man has had to devise many strange machines for fighting them, and for preventing their costly havoc.



E.N.A.

WATERING EGYPT'S PLAINS WITH HAND-BUCKETS

In Egypt, water has for centuries been raised from the Nile by hand. One method is shown in this picture. The "buckets" are pulled down by hand, filled, and then lifted by means of the heavy lumps of clay. The water is poured into little ditches, or canals, that carry the water to the dry fields. This primitive method of irrigation still persists in many parts.

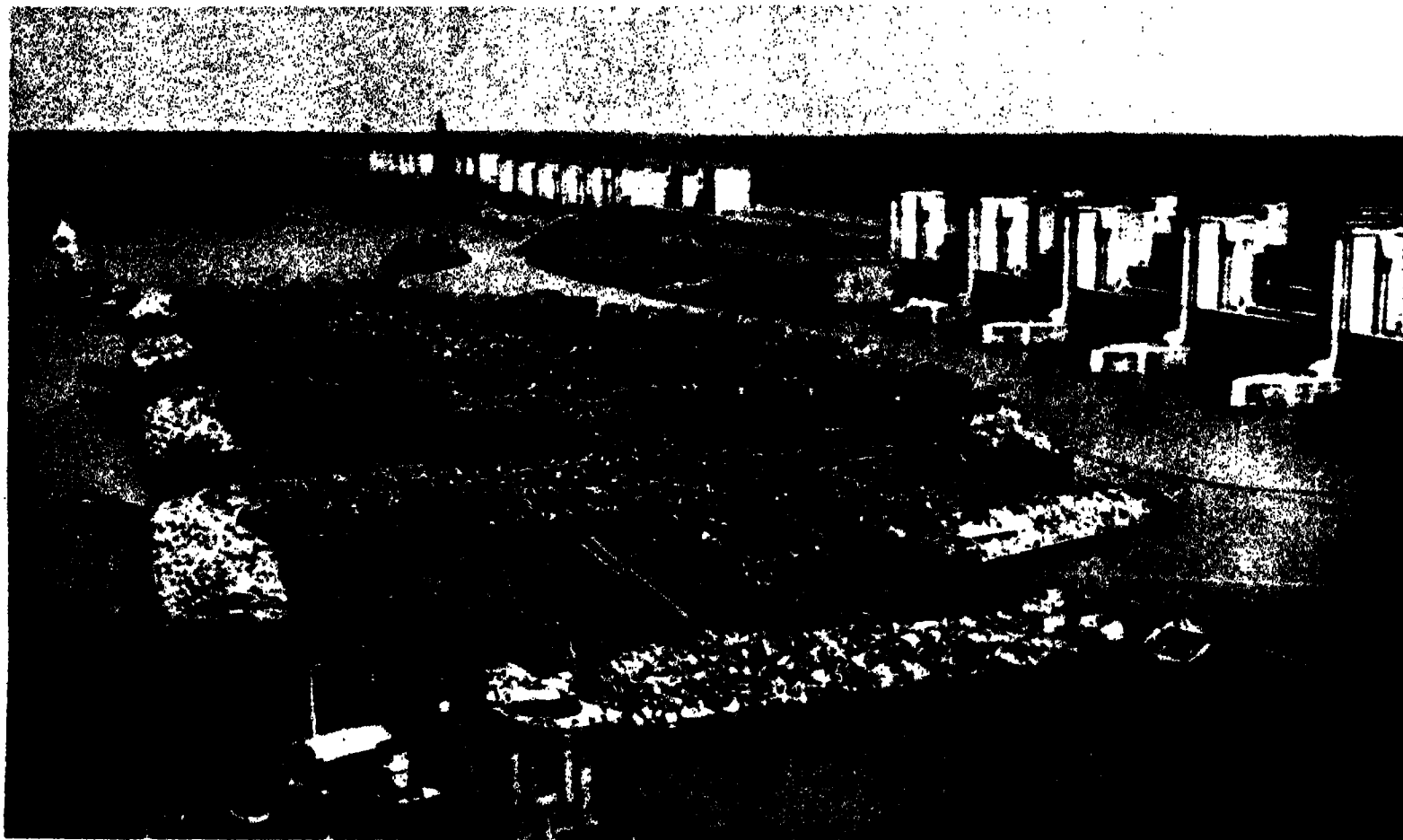
MAN VERSUS NATURE



E.N.A.

THE LAND WINS THIS ROUND OF ITS EVERLASTING FIGHT WITH THE SEA

The Dutch were the first to build dams to reclaim land long drowned by the sea. This picture, taken in 1932, shows the very last opening in the huge Zuyder Zee dyke being fitted. But for this frail rampart, half Holland would be under water.



E.N.A.

BRUSHWOOD MATTRESSES THAT PROTECT THE DAM

Outside the dam large rafts of brushwood, weighted with boulders, were sunk in order to prevent the scouring of the sea bottom. Otherwise the swift and persistent currents might carry away the mud and weaken the dam. The land reclaimed by this engineering feat is a tribute to the untiring skill and perseverance of the Dutch in the face of difficulty.

MAN VERSUS NATURE



E.N.A.

GROWING FRUIT AND VEGETABLES ON THE BED OF THE SEA

The little town of Medemblik was once a port, but the reclamation of 20,000 acres of land around it has converted it into the inland centre of a new province. In a few years the land in the background will yield tons of fruit, vegetables, and flowers.



E.N.A.

FIGHTING FRUIT DISEASE FROM THE AIR

The modern farmer takes to the air, sweeps low over his large field of Californian grape vines and sends forth clouds of poison to destroy phylloxera, insects which cause a common and serious disease of the vine. The poison powder is blown hard against the earth and rebounds sufficiently to reach the under-sides of the stems and leaves as well as the tops.

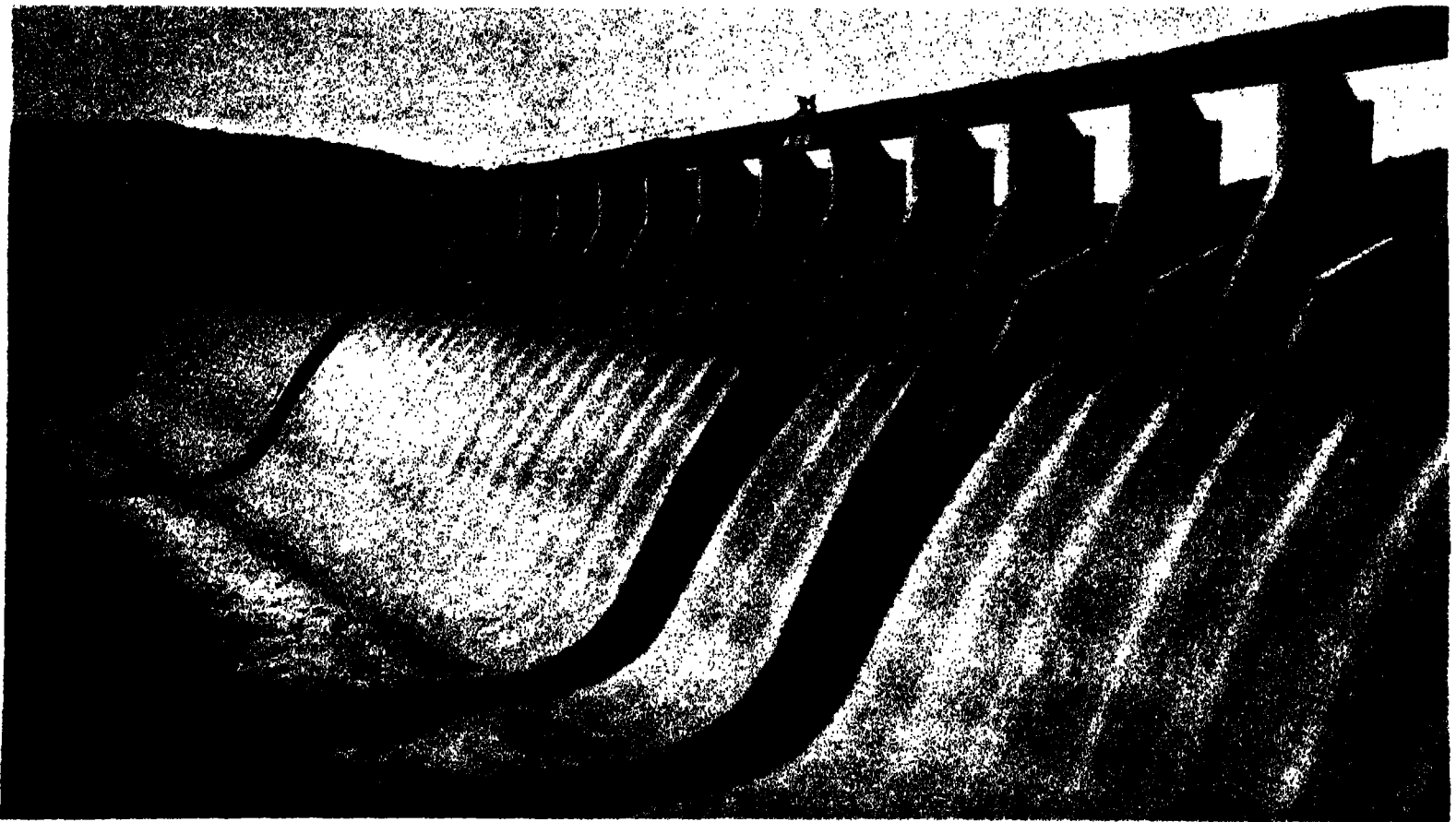
MAN VERSUS NATURE



E.N.A.

A GREAT DAM IRRIGATING 15,000,000 ACRES OF DESERT

The largest irrigation system in the world is the Lloyd barrage at Sukkur in India, opened in January, 1932. The barrage holds up the waters of the Indus and distributes it by means of canals. The view shows the head regulators of three of the main canals that take off from the right bank of the river. There are three canals on the left and four on the right bank.



E.N.A.

HARNESSING THE COLORADO RIVER

Two miles above the city of Austin, Texas, a huge mass of granite masonry 1,200 feet long, from 60 to 70 feet high, and from 18 to 66 feet thick, has been built across the Colorado river. Lake Macdonald, formed by the dam, is twenty-five miles long. This supplies water and water-power for the whole of the city of Austin, the capital of the State of Texas.



E.N.A.

SUFFOCATING THE MOSQUITO WITH OIL

The mosquito—the dreaded carrier of malaria and yellow fever—breeds in stagnant water; but its larvae can be suffocated by covering the top of the water with a film of oil. This is done wherever it is too expensive to drain away the water. The view shows a worker pouring oil over a pool of rubbish in the marshland district of Long Island, New York.

MAN VERSUS NATURE



E.N.A.

WIRELESS FIGHTS THE DREADED TYPHOON

At Shanghai, the Jesuit priests maintain an observatory from which news is broadcast through the Far East. A ship warned of the existence and position of a typhoon, can thus at once try to get out of the dangerous path of this horror.



E.N.A.

TRAPPING THE LOCUST IN DEEP PITS

In the Argentine myriads of locusts, at a period when they are unable to fly, are driven into deep pits by means of canvas screens. When the pit is nearly full, paraffin or other inflammable material will be poured upon these pests to destroy them.

MAN VERSUS NATURE



CUTTING THROUGH SNOWS AND A MOUNTAIN SIDE

E.N.A.

Here is a typical cutting through the frozen snow at the entrance of one of the tunnels of the Trans-Andine railway that connects the Argentine and Chile. The only way to circumvent the great mountain barriers is by roads and tunnels.

The RELIGIONS *of* THE WORLD



TO THE GREAT SPIRIT

G.P.A.

This magnificent picture of an American Indian at prayer illustrates the universal urge of humanity to seek its creator.

RELIGIONS OF THE WORLD

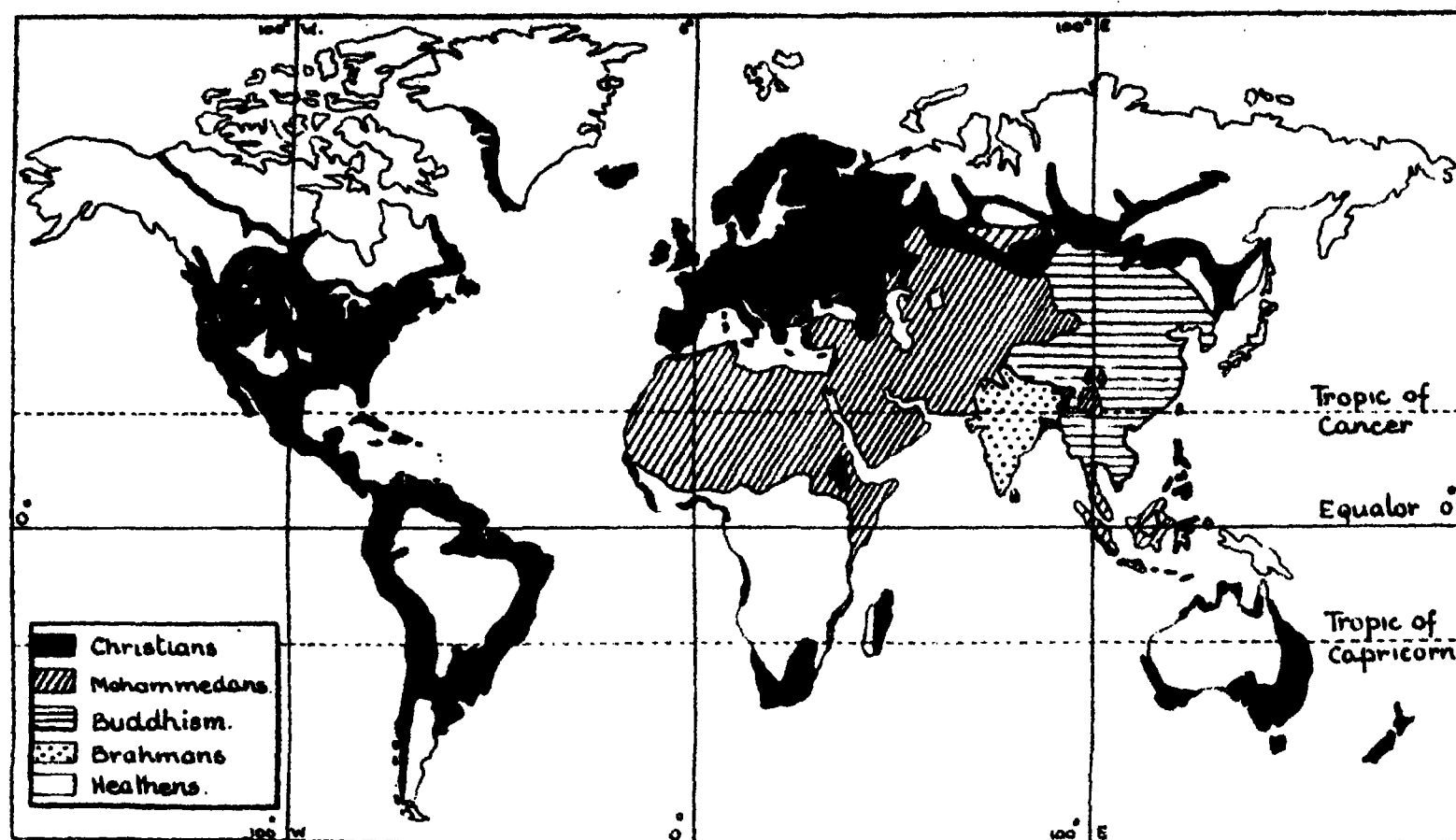


Fig. 16.—THE RELIGIONS OF THE WORLD.

AS soon as men had intelligence enough to feel wonder, they must have begun to find the world full of mysteries. There seemed to be powers in Nature doing things, and these powers were feared. A sort of puzzled worship was the consequence. More than that. The earliest men could certainly admire, for all animals and birds are aware of beauty. It is a lure of sex. In the bower bird and others it is even a motive in nest building. They decorate. It is evident that men, as they became self-conscious, would admire behaviour, and so would begin to have moral notions. Worship and moralities combined to make simple religions from the first.

These are found to-day among primitive races. They seem curious and often cruel; but they give us a measure of primitive intelligence, from which we have advanced a little. It is easy to understand that simple minds do not think about the Universe, but fix on any smaller mystery that directly threatens or helps, or can be thought to do so.

There is probably nothing that men have not worshipped and made plans about—like children at play, except that they were desperately in earnest; for these primitive religions are found trying to please or to use (by magic rites) trees, rocks, rivers, mountains, cowrie shells, birds and beasts, the sun, moon and stars. Nothing is too

fantastic for ignorant belief, nothing too harsh for ignorant practice. Yet moral systems come into being, and the moral sense of mankind develops. The totem signs of the American Indians, which represent birds and beasts as guardian spirits of their tribes, have suggested to these tribes some of their marriage laws and usages. The Bantu races of Africa, who think there is a spirit in every natural object and make fetishes to represent the spirits, govern their lives by rites and customs that are supposed to cajole them. A pious Babylonian, leaving home in the morning, might see a dog-fight or disturb a sparrow; and he did nothing that day till he had asked his priest what to make of it and what to do. Peoples admiring behaviour made gods of their heroes and kings, and tried to imitate and obey them.

It is a fascinating study; but nowadays we call these pieties of low intelligence superstitions, and keep the name "religion" for greater conceptions. These have emerged as the ages passed, turning more and more from barbarism. They have differed in different lands, as peoples differ. Some of them have been enlarged and softened by new knowledge and thought; some appear to be stereotyped and likely to die out. This fate befel the religions of Egypt, with their cult of the dead through long dynasties, their king worship and sun worship; as it befel the

RELIGIONS OF THE WORLD

horrible superstition of the Aztecs with their unnumbered slaughters.

So far as the evidence goes, the Chinese were the first to believe in one God as the source of all things. Ancient fragments embodied in the

oldest sacred book of India, the Rig-Veda, shows that a developed religion existed there between 750 and 1000 B.C., the beginnings of which must have been much older.

It is in India that the most binding and the



British Museum

THE £100,000 CODEX SINAITICUS

Here is a page of one of the oldest Bibles in the world. It was written in the Fourth Century, in the Greek language, on parchment. Portions of the complete work have been lost or destroyed. The portion from which this page was taken is stated to have been presented by the monks of the Monastery of St. Catherine on Mount Sinai to Alexander II, Czar of Russia. It has recently been sold by the Soviet Government to the British Museum for £100,000, and is now on view.

Odes and Annals, and said by tradition to date from 2700 B.C., show this belief and tell nothing of idols. Yet the surviving main religion of China is the least spiritual of any, though it indeed teaches the worship of ancestors, as if they must be thought to have after death some state of being; yet Confucius (born about 550 B.C.) taught a practical morality that has little concern with a future life. But, beside Confucianism in China there is Buddhism, which had its rise 150 years earlier in India; and the

most complex religious system of the world has been built up, namely, Brahminism, of which Buddha was an unorthodox reformer. This endures in full power, though Buddha's teaching has spread not only in China, but in Tibet, Mongolia, Burma, Siam, Ceylon, Java, Japan and other lands. Let us see how Brahminism grew during thirty-five centuries, to keep its hold on more than 200,000,000 Indian souls.

It was at first a belief in many gods, not one—chief amongst them a god of the bright sky

RELIGIONS OF THE WORLD

(Dyanspita), a god of the dark sky (Varuna), a god of light (Mitra), a god of fire (Agni), and a sun god (Vishnu). It taught morals as a condition of welfare in this life and the next. In time, ritual was designed by the priests and theology reached the idea that all we see is One, but that we see all imperfectly—i.e. there is a Supreme Being of whom the universe is an illusory show. He was believed to appear on earth from time to time in human form, and a variety of gods who had become popular were all recognised officially. Brahma, Vishnu and Siva, the well-known Hindu trinity, took precedence of others but neither banished others nor looked askance at myths of all sorts. The Brahmins—the priesthood—while tolerant in this way, claimed, however, to be rulers of thought and life; and so they made themselves a caste, and ordained other castes in a series running down through society, to be kept for ever apart. For the rest, their theology is confused. On one myth or another, or with one purpose or another, they devised or sanctioned sacrifices, food restrictions, child marriage, the death or lonely life of widows, mystical aberrations of sex, and other customs that are strange to us.

Buddha, a young prince of the Sakya clan, founded a more ascetic faith by teaching that all human desires should be overcome. Because of these life is painful; surmount them and you enter into bliss or Nirvana. As the doctrine affects all men, it strikes at caste; but there is also a doctrine of re-incarnation, with the idea that bliss may not be attained in one lifetime. Neither faith attempts to ameliorate the human lot, and both faiths are obscurely mystical. A curious and elaborate art adorns their shrines.

In Persia, while it was a great empire, Zoroaster (known also as Zoroastrian) founded or simplified a religion about 600 B.C. This, though derived from Nature worship, teaches that there is one God, Auramazda, supreme over others; yet it seems to view the conflict of good and evil as his warfare against a hostile power equally real. It is free of myths, and much more energetic for virtues than Eastern faiths are, in general, requiring honesty, truth, hospitality, charity and, on certain lines, purity.

Nothing but sculpture and ruined temples remains of the Greek Nature worship, though its influence, joyous, touched by the master-sense of beauty and making at last for philosophy and science, has been great in Europe. Its spirit

joined at Alexandria with that of Hebraism to develop early Christianity, and was renewed to the same end after the Middle Ages of our era. The gods of ancient Rome and the myths of Celts and Teutons faded with no such vestige.

The story of Hebraism, beginning with a mountain deity and lore from Babylonia and Egypt, but in time begetting the pure monotheism to which Jesus gave a new meaning, is widely known. It begins in obscurity among a group of Semitic tribes, assembled on the hills that face the eastern Mediterranean, and gathers historical shape as they are time after time overrun by great conquerors, carried away as slaves and return, to be finally robbed of their country and dispersed over Europe. In spite of all they believe themselves to be a chosen people, and the effect of these hard fortunes is only to change and develop their sense of the divine purpose with them. This is expounded by prophets and poets in a rich and patriotic literature, and given the force of law by an hereditary priesthood. After 3,000 years of unexampled adversities, the Hebrew code, enjoining social customs as well as a creed, keeps the Jewish race apart from others, yet sharing the world's ideals in a measure greatly helpful to civilisation.

So much cannot be said for the religion of Mohammed, which sprang from Christianity with strange differences at the end of the sixth century. But it controls the morality of 220,000,000 souls in Turkey, India, Egypt, and elsewhere, and in recent years it has begun to free its women and admit new thought, if not to frown on slavery.

The religion of Jesus Christ, awaking bolder hopes for mankind than all others, has meantime spread throughout the world. It alone attempts an amelioration of the human ordeal, and, more or less, freely accepts the gains of knowledge which time allows men to accumulate. No other admits of a variety of individual creed so great, while preserving the spirit of its founder. To-day the Christian peoples, however alike their aim and practice be in a liberty without precedent, see many beliefs kindling that must stand the test of time.

In the lifetime of any religion 1,900 years is not long, and none has ever been established against change. Nor has any but Christianity sustained its central ideals against a shock at all comparable to the birth of science in our time, and what has come of that development for thought and life.

J. KEIGHLEY SNOWDEN.

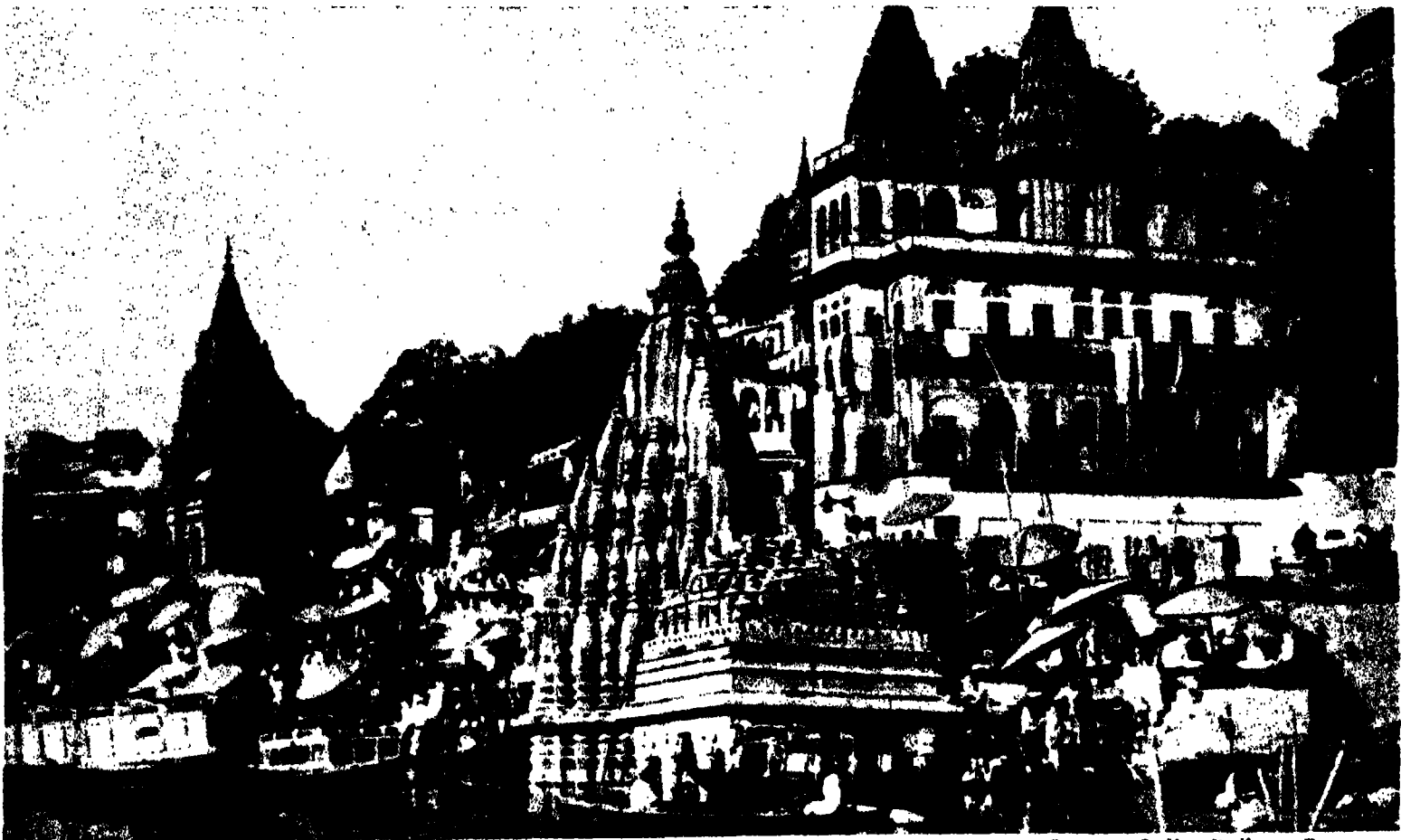
RELIGIONS OF THE WORLD



Courtesy, Canadian Pacific Railway.

THE SACRED BULL OF BENARES

Throughout a large part of India, the bull is a sacred animal and is worshipped by millions of the faithful. Here is a gigantic garlanded idol, wrought in stone and guarded by an ever-watchful attendant, who, on his high stool surveys the passers-by.



Courtesy, Indian Railways Bureau

THE HOLY CITY OF INDIA'S TEEMING MILLIONS

Benares is one of the sacred cities of the world. It is a centre of Brahminism, the faith of roughly three-quarters of the people of India, which teaches that all men are unequal and divides them into castes. More than 3,000 years ago Brahminism had its home on the banks of the Ganges. Every year thousands of Indian pilgrims go to bathe in these sacred waters.

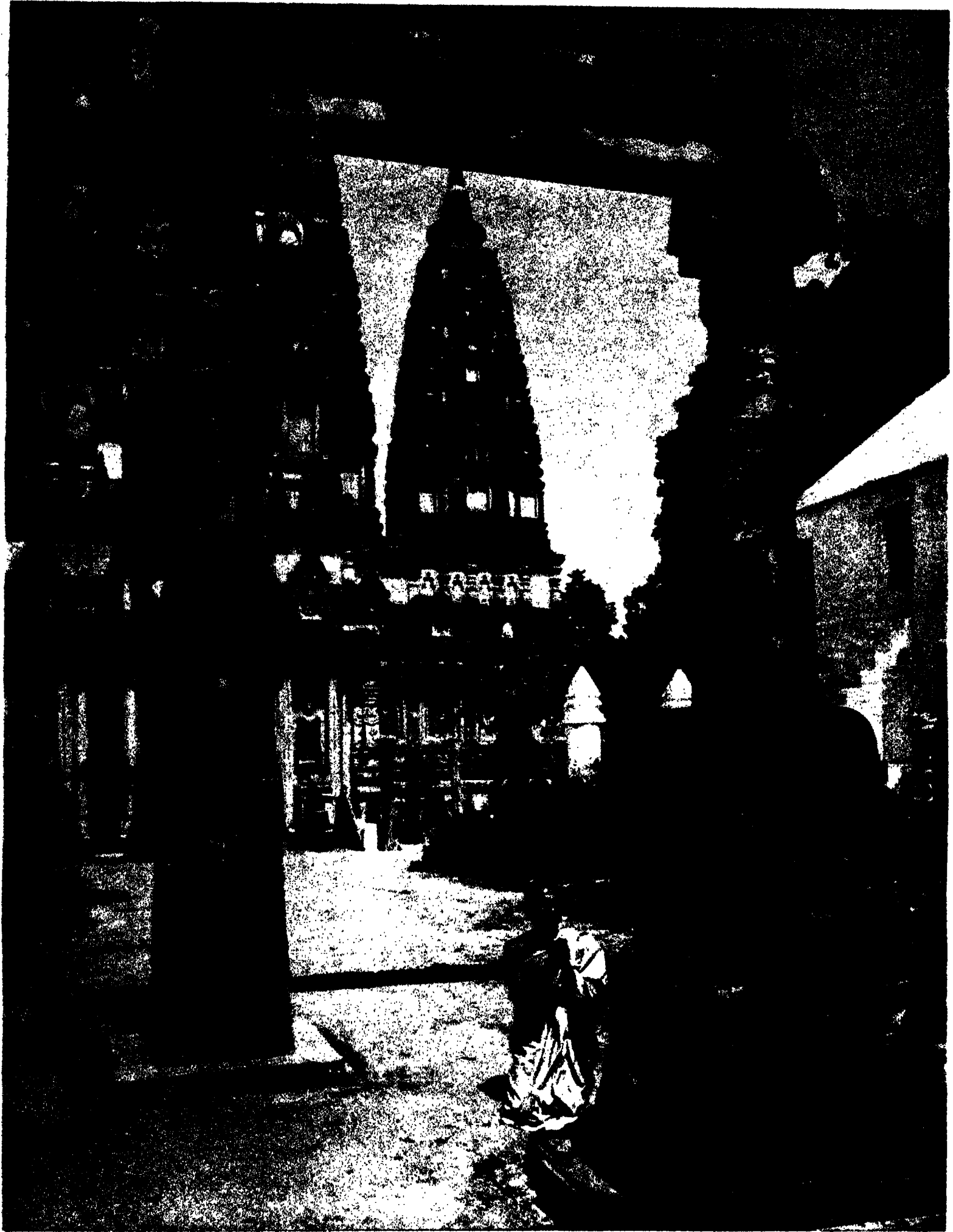
RELIGIONS OF THE WORLD



Courtesy, Indian Railways Bureau

WHERE COWS HAVE THE RIGHT-OF-WAY

In the Hindu religion are innumerable gods, worshipped with strange rites. Certain animals, especially the cow, are looked upon as sacred and treated with great reverence. To kill or injure a cow is an unforgivable sin, and these animals are allowed to wander unchecked about the streets till they die a natural death. Animal gods belong to many eastern religions.



Courtesy, Indian Railways Bureau

BUDH-GAYA—THE "MECCA" OF THE BUDDHISTS

The temple of Budh-Gaya, a village in Bengal, is revered by pilgrims as the original centre of the Buddhist religion. About 500 B.C. a Hindu prince, Gautama, broke away from orthodox Hinduism and taught that one could obtain everlasting peace only through the complete mastery of all desire. To this end, devout followers inflict much pain upon themselves.



BOY DRESSED FOR INITIATION INTO THE BUDDHIST PRIESTHOOD

G.P.A.

Boys enter the Buddhist priesthood at an early age. This boy, in a village in northern Siam, is dressed for the initiation ceremony. His life from henceforth will be dedicated to the religion of his forefathers, irrespective of his own boyish wishes.



G.P.A.

HOLY MEN OF NORTH INDIA

Holy men such as these are to be found in all parts of India. They spend their whole life in prayer and believe that the spirit can only be freed when the body is under complete control. To this end they spend much time in fasting, and, as the man in the centre of the picture, in most uncomfortable positions. Often they lose the use of one or even more limbs.



E.N.A.

SINISTER VULTURES ON THE TOWER OF SILENCE

As the burning or burial of their dead is prohibited, the Parsees expose the bodies in open towers, called the Towers of Silence, there to be devoured by vultures. The Parsees who live in Bombay are the chief followers of Zoroaster, a Persian philosopher-prophet, who lived probably between 650 and 580 B.C. and taught a belief in one supreme God.



G.P.A.

FORTY-SEVEN YEARS ALONE ON A MOUNTAIN TOP

This Buddhist hermit with cope and mitre has lived for forty-seven years in a cave above a monastery near the summit of one of the mountains west of Peking. One of his devotions is to sit for days in one position, mumbling his endless prayers.



G.P.A.

THE HALL OF TEN THOUSAND BUDDHAS

In the centre is the figure of a Buddha in meditation, and lining the walls all around are ten thousand little gilded replicas made of baked clay, a perpetual repetition of the Buddha of longevity, which represent the eternal prayers of the founder.

RELIGIONS OF THE WORLD



G.P.A.

"THE HOUSE OF A THOUSAND GODS"

This pagoda, five miles outside Shanghai, is "The House of a Thousand Gods." The life-like images are the objects of much devoted worship, and peasants, however poor they may be, present them with money or strongly perfumed joss-sticks.



G.P.A.

LAMAS OF PEKIN BEFORE AN INCENSE BURNER

These three Mongolian lamas are kneeling before a sacred incense burner in the grounds of the Lama Temple in Peking.

RELIGIONS OF THE WORLD



G.P.A.

THE ANCESTOR WORSHIPPERS OF JAPAN

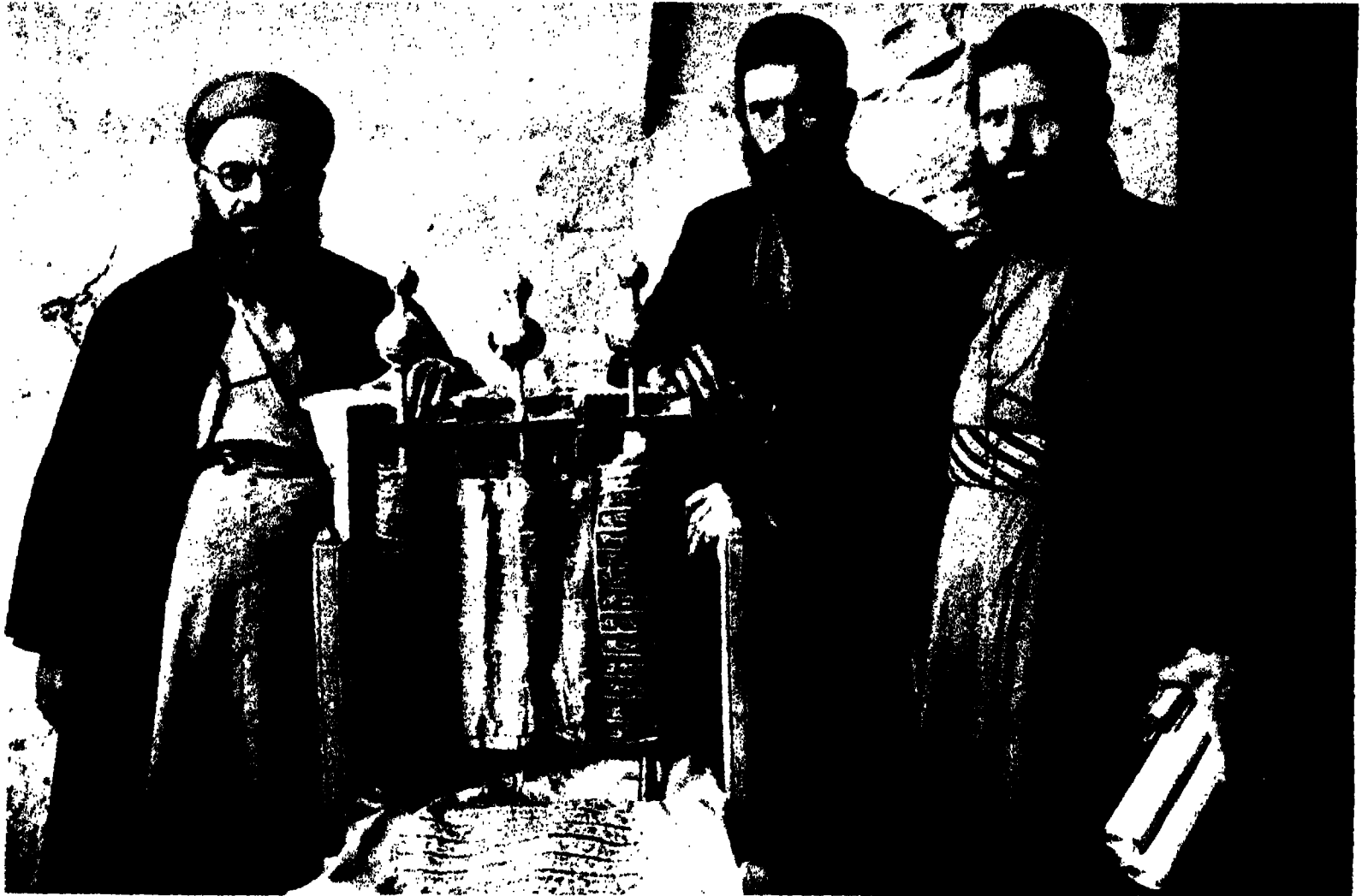
The national religion of Japan was Shinto until the introduction of Buddhism which quickly supplanted it. The Shinto religion however, still survives, and here we see priests at their devotions which consist largely of ancestor and nature worship.



G.P.A.

A STRANGE MARRIAGE CEREMONY IN PERU

It is customary among the Chuncho Indians in the Peruvian jungle to conclude the wedding ceremony with the breaking of a symbolic earthen jar by the high priest. The bridegroom is on his knees at the left, holding the hand of the bride.



E.N.A.

ONE OF THE OLDEST MANUSCRIPTS IN THE WORLD

This is a photograph of the most important sacred book of the Jews, the Pentateuch. It was compiled between A.D. 400 and A.D. 900 from old manuscripts, the earliest copies of which may have been compiled 3,000 years ago and which were written on the skins of lambs offered in sacrifice. To the Jews belongs the honour of establishing the first great religion.



E.N.A.

PROSTRATE IN PRAYER

The picture shows a number of Mohammedans prostrate in prayer during the fast of Ramadan, during which, for a whole month, they touch neither food nor drink from dawn to sunset. It was about the end of the sixth century that Mohammed, by his religious teaching and military successes, welded the scattered and very warlike Arab tribes into a great nation.

RELIGIONS OF THE WORLD



Courtesy, Canadian Pacific Railways.

"ONCE IN ROYAL DAVID'S CITY . . ."

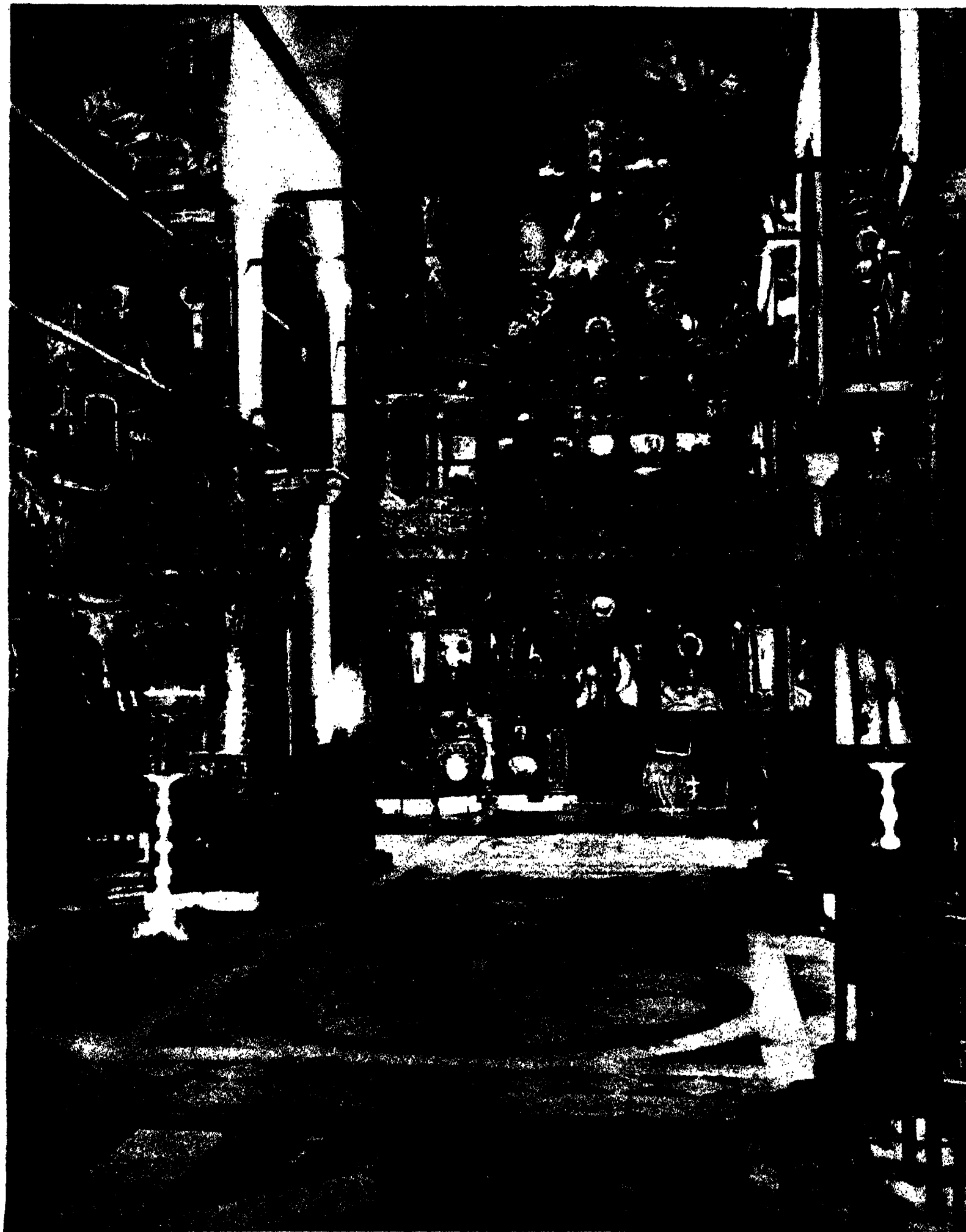
Nearly 2,000 years ago, there was born in the village of Bethlehem in Palestine, Jesus Christ, the founder of the Christian religion, who taught "a new and simple and profound doctrine—namely, the universal Loving Fatherhood of God and the coming of the Kingdom of Heaven." The church marks the traditional spot where the Child was laid in the manger.



E.N.A.

ONE OF THE WORLD'S MOST FAMOUS ROOMS

In this sixteenth-century room in the Wartburg, Luther translated the Bible into German and made it available to the people, thus setting on foot the great Protestant Reformation, which was destined to rend Christendom in two.

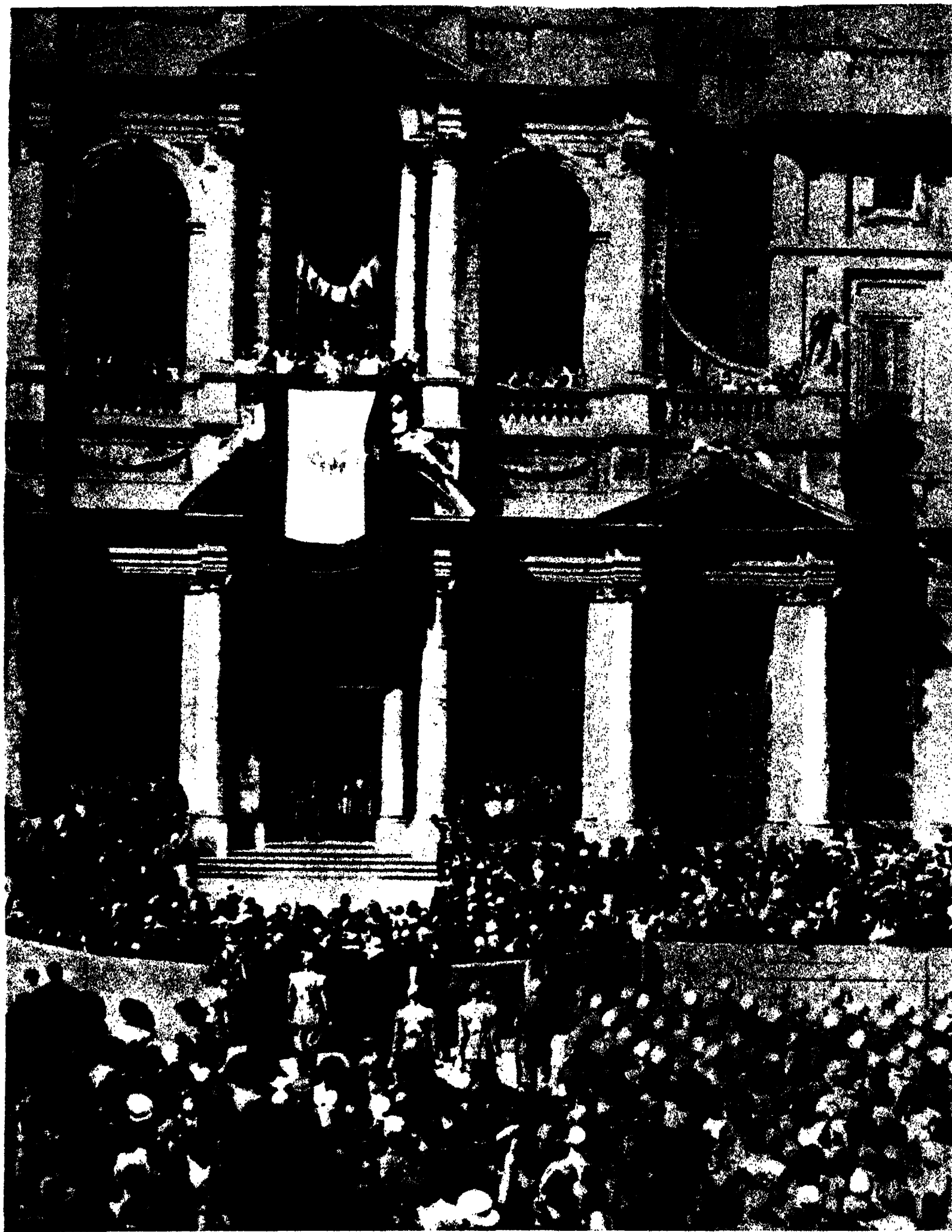


E.N.A.

THE DAZZLING SPLENDOUR OF THE GREEK CHURCH

This is a picture of the church at Rilo Monastery in Bulgaria, rich with splendid decorations, its elaborate crucifix and numerous pictures of the saints. In 1054 the Christian Church definitely split into two great sections, that of Rome in the west and that of Constantinople in the east. The Copts in Cairo, however, claim that they are the oldest Christian church.

RELIGIONS OF THE WORLD



THE POPE BLESSES A CROWD IN ROME

E.N.A.

The Roman Catholic church claims to be the direct continuation of that founded by Christ, and its head, the Pope, is acknowledged by its members as Christ's representative on earth. Thousands of pilgrims flock to Rome every year.

WHAT THE DOCTOR IS DOING

PERHAPS man's greatest achievements in the conflict with some of the evil effects of Nature, are to be found in the field of medicine and surgery. Research in these fields is always steadily going on, but at no time in the past have there been so many people studying the causes and cure of disease as there are now. Thousands of earnest workers are daily at their desks and in their laboratories trying to solve the many problems of disease. Institutions, backed by huge sums of money, have sprung up, all devoted to the object of eliminating, as far as possible, the scourge of disease that besets the human body. The results of their labours make a fascinating story. Some of the most recent advances in medical science are set down here to indicate the lines along which scientists are travelling.

In order to counteract anaemia, blood is now transferred from one person to another. As the character of the blood which is used is very important, it is necessary to test it in order to see that the "blood groups" of the donor and the patient are the same. Countless lives have been saved by this very simple operation, which is now performed daily in all large hospitals. In cities, a service of people who are willing to give their blood has been organised. These people are placed in "blood groups" in readiness to give their blood to a patient in their own group when required. The operation does not affect the giver, who, after resting for an hour or two, goes back to his work.

One of the outstanding events of medical research since the war has been the discovery of insulin. The use of insulin in cases of diabetes has not only prolonged thousands of adult lives, but has also enabled many children to grow up and lead useful lives who would, formerly, have died at an early age.

In the case of the disease known as pernicious anaemia, treatment obtained by giving the patient a diet containing a large amount of liver has been remarkably successful.

Until recently general paralysis of the insane has been considered hopeless, but recently cases have been inoculated with a form of malaria and then treated with quinine. The improvement in the patient's condition is always quite marked and in some cases the sufferer has been able to return to normal life and responsible duties.

Perhaps the most terrifying scourge of the present day is cancer. A good deal of evidence is accumulating that certain forms of cancer, if not all, are due to a virus which is so small that it can pass through any kind of filter. It has, however, been photographed by ultra-violet light.

It should be remembered that cancer, if treated early, is definitely curable. A Liverpool scientist has recently modified the method discovered by a Dutch observer, that of testing the blood to prove the presence of cancer, and this method has now attained a high degree of reliability, thus effecting treatment at an early stage.

The Wonder of the X-Ray

In diagnosing diseases and injuries X-rays have proved themselves invaluable. Indeed, it is now a routine practice to take X-ray photographs of all cases of injury where there is likely to be any damage to bones.

Special methods have been introduced for the examination of soft tissues. Substances which are opaque to the X-rays have been injected into the bronchial tubes to show whether or not they are dilated, and into the spinal column to show the presence and position of tumours.

X-rays are also valuable in the treatment of many skin diseases, especially in chronic cases, and they are palliative in certain forms of malignant disease. Recent improvements in the methods of their use have made advances in treatment possible and, by intensive exposure, the remedial treatment of even deep-seated growths has been carried out.

Radium can be used for the treatment of the same diseases as those which are attacked by X-rays, but its use calls for very special knowledge, and it can be handled only by experts. For this reason it is usually employed only in establishments which possess the staff and equipment necessary for its proper administration.

In former times smallpox was never absent from this country. From time to time epidemics swept the country, taking toll of many lives. A country doctor, Edward Jenner, in 1796, showed that the condition known as "Cow-pox" gave immunity to smallpox. From that time "vaccination" with cowpox has been carried out with the result that smallpox is almost unknown. It can be said that in a population with a high percentage of vaccinated persons, the incidence

WHAT THE DOCTOR IS DOING

of smallpox is correspondingly small, but as the percentage of vaccinated persons falls, so the incidence of smallpox increases. The work of Pasteur, Lister and Koch is based on the original work of Jenner, and the modern applications of vaccination and inoculation are now too numerous to mention here. But to quote one example of the efficacy of inoculation, it is only necessary to compare the mortality from typhoid fever in the Boer War when there was no inoculation, with that of the Great War where every man was inoculated against typhoid. In the Boer War there was as many deaths from typhoid as from the bullets of the enemy. In the Great War typhoid fever was kept down to a comparatively few cases.

New Food Discoveries

One of the most striking discoveries of late has been in connection with food. It has been found out that foods contain varying amounts of substances called vitamins. Of these, Vitamin A, which is soluble in fat, and Vitamin B, which is soluble in water, are regarded as being necessary to the processes of growth.

Unfortunately, it is sometimes necessary to remove some part of the body entirely by means of an operation. The safety of an operation to-day is due to the work of the late Lord Lister. In the times of our own fathers, many people preferred to die rather than enter a hospital, because they knew only too well that the percentage of deaths after an operation was appallingly high. Hospital gangrene was rampant and spread from patient to patient. Cleanliness in hospitals was sadly lacking and the nursing service was in many cases worse than useless, being unorganised.

Lister's Legacy to Mankind

Then came Lister with his ideas of absolute cleanliness and with his steam kettle in the operating theatre, which sent out a fine spray of antiseptic over doctors and patient alike. Gradually the principles he advocated were adopted and sepsis was fought by the use of anti-septics. Later, sepsis was eliminated by even more thorough cleansing.

In a modern operating theatre the surgeons and attendants are clothed from head to foot in garments which have been boiled. Faces, mouths and noses are covered up. Gloves are worn and, after the hands have been washed in seven or eight changes of water, nothing must be touched except articles coming straight from the sterilising

chambers. Instruments, dressings, towels, in fact anything coming into contact with the patient, have to undergo this rigid sterilising process. Thus are the patients kept free from sepsis.

To show how particular a surgeon has to be during the course of an operation we may suppose that his nose itches. He has to call an attendant who is not touching anything coming into contact with the patient and request him to do the necessary scratching. He may not touch his own face lest his hands should cease to be aseptic.

Modern surgery owes much to the late war. Experience then gained was immense and invaluable. No region of the body is now inviolate from the knife of the surgeon, and the most recent wonders in this field are the delicate and difficult operations carried out in the remote depths of the brain.

After the war the art of plastic surgery received a great impetus owing to the number of cases of disfigurement through wounds—cases in which the features had to be laboriously restored and faces built up of grafted skin and artificial bone.

The Sun as Healer

One of the greatest triumphs of modern science is illustrated by the fight against tuberculosis. Of all the infectious diseases, this is the one in which the general condition of the patient plays the predominant part. Its rational treatment, therefore, aims at the rebuilding of the entire organism.

We have now learned that pure air, outdoor air, is necessary for children from the earliest days, and that keeping little children indoors and depriving them of fresh air and sunshine, as is so often done from an exaggerated fear of colds, is wrong. We have learned the vital importance of constantly renewing the air of all rooms and of allowing the sunlight to penetrate freely, and no longer lower the blinds the moment a ray of sun creeps through the window, for fear of the carpet being faded. There is much truth in the old Italian proverb, "Where the sun enters the doctor remains outside."

In Dr. Rollier's clinic at Leysin the children go about in the sun with no clothing at all and they sit out at school even in the snow quite naked. He has obtained countless cures of cases of tuberculous bones by simply putting the patients to lie in the sun and air for long periods after they have become acclimatised to the treatment.

WHAT THE DOCTOR IS DOING



E.N.A.

BRUSHING OUT THE EVIL SPIRITS OF DISEASE

Here is a Papuan sorcerer charming illness from a patient by means of leaves supposed to contain some magic cure.



G.P.A.



G.P.A.

BUT THE DAYS OF THE VOODOO ARE NUMBERED

But even to the older natives the idea of disease as a curse from the gods is fast becoming a legend, and the superstitious "magic" of witch doctors and medicine men has been superseded by medical knowledge. Left: Two victims of sleeping sickness; the dreaded disease, caused by the tsetse fly, which only too often decimated whole native villages at a time.

WHAT THE DOCTOR IS DOING



G.P.A.

A NATIVE HOSPITAL IN THE BUSH

In equatorial West Africa, the natives are themselves fighting sleeping sickness. They run their own hospitals where microscopic examinations take place and where they receive proper treatment, usually supervised by white doctors.



Courtesy, Middlesex Hospital

A BOMB THAT HEALS

This patient has been treated with a one-gramme radium bomb in the special treatment room at the Middlesex Hospital. The value of the radium in this bomb is about £16,000, and to keep it fully employed patients are treated during twenty-four hours of the day. The walls, floor and ceiling of the rooms are protected by lead to prevent the escape of rays.

WHAT THE DOCTOR IS DOING



Courtesy, The Treloar Cripple Hospital, Allon

THE MAGIC SUNSHINE-LAMP OF HEALTH

In England the sunshine is not constant, but the deficiency is largely made good by the use of artificial sunlight lamps.

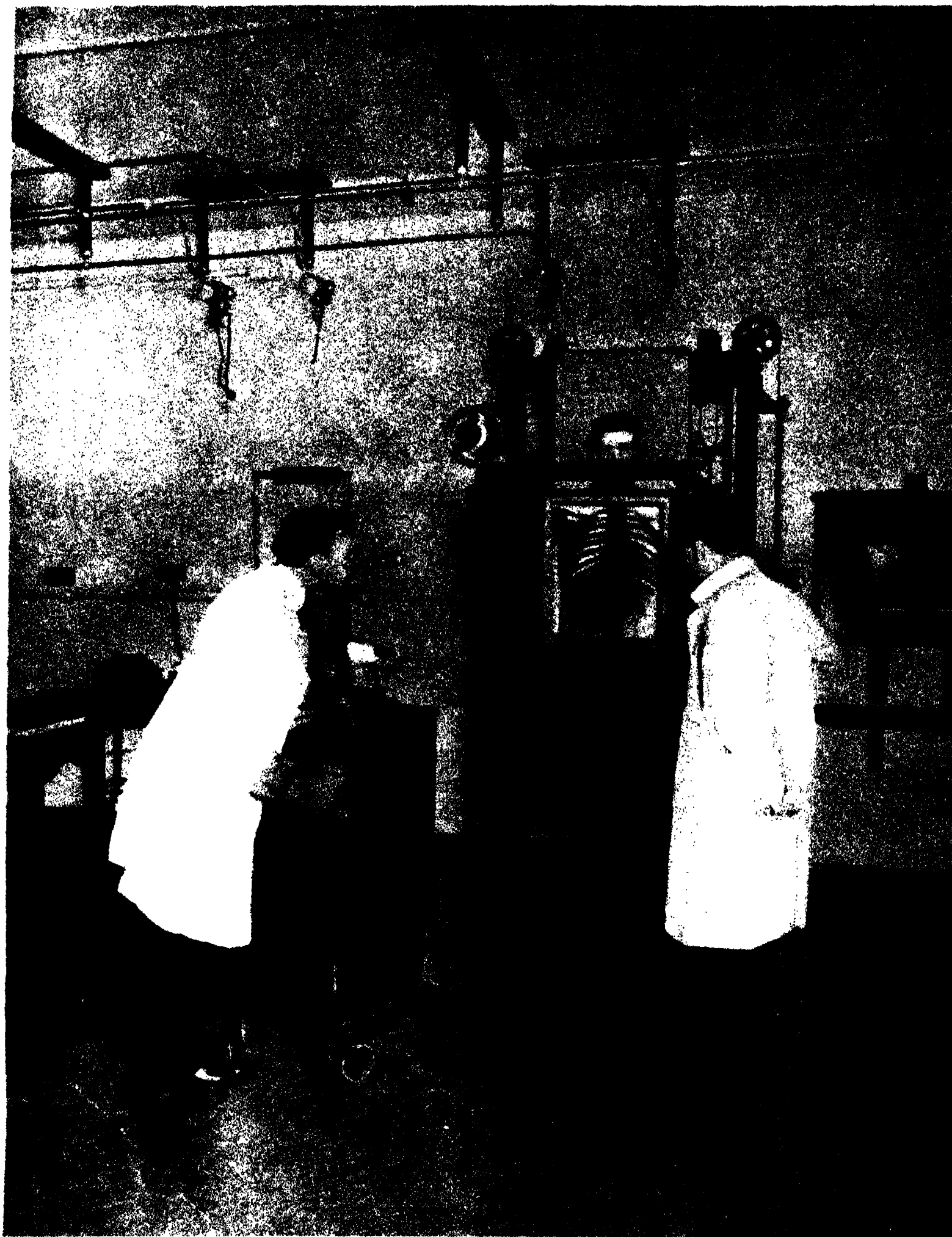


Courtesy, Princess Beatrice Hospital

A TENSE MOMENT DURING AN OPERATION

Through the window on the right some probationer nurses are watching the operation as part of their training. Even behind a glass screen they wear masks like the doctors and their assistants to avoid the slightest possibility of infection.

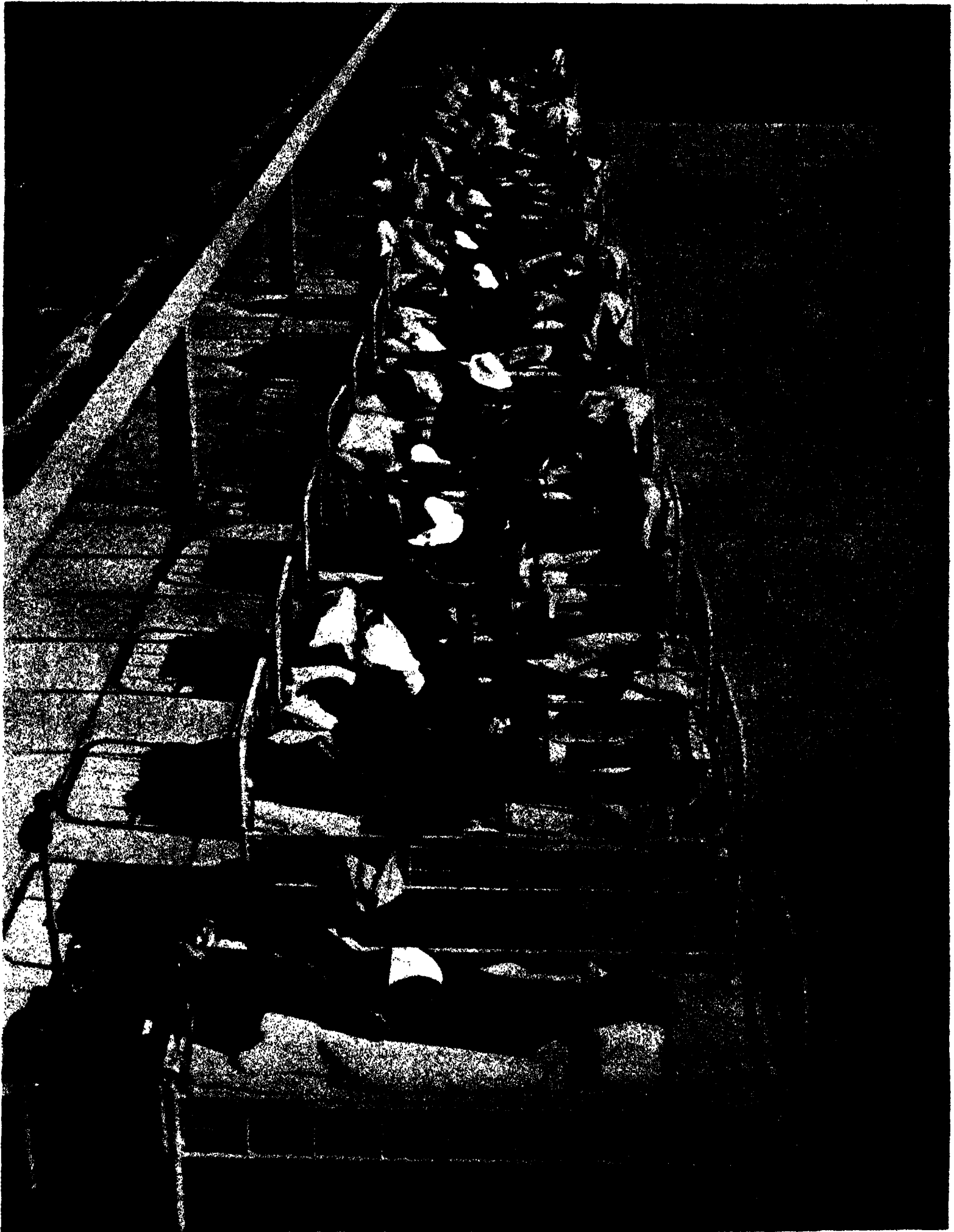
WHAT THE DOCTOR IS DOING



THE MAGIC X-RAYS

This complex piece of apparatus looks like something out of an alchemist's cell. It is really a modern arrangement whereby the doctor can examine his patient by means of X-rays. A man's chest, heart and lungs are clearly seen in this picture.

WHAT THE DOCTOR IS DOING



Courtesy, Dr. Rollier

WORK IS BETTER THAN PLAY IN THE SUNLIGHT

It has been found that patients recover more quickly if they do real work than when merely lazing in the sunshine. Here you see the solarium at Leysin, Switzerland, where tuberculosis of the bones is treated by exposure to the sun and air.

WHAT THE DOCTOR IS DOING



Courtesy, Dr. Rollier

A SCHOOL THAT CARRIES ITS DESKS ON ITS BACK AT LEYSIN, SWITZERLAND

The boys in this picture are carrying their school desks up to a spot on the mountainside where they will spend the day at their lessons in the healing sun and air. Sun bathing has become increasingly important during the last few years.



Courtesy, Dr. Rollier

AT SCHOOL IN THE SNOW AT LEYSIN, SWITZERLAND

Ski-ing up the mountain side, these delicate children, practically without clothes, are able to do their lessons in the open surrounded by snow. They have even carried their desks with them, and you may see their skis stacked behind them.

TRAVEL AND TRANSPORT ROUND THE WORLD

AS soon as man begins to wander far afield it becomes necessary to provide some means of carrying himself and his belongings, and the more people travel, the greater becomes the need for adequate means of transport. When the transport is available it is used for carrying extra goods for exchange with the peoples of other countries and so the wheel goes round.

In the illustrations to this section examples have been given of the primitive methods of transport used by less civilised people in many parts of the earth. They are interesting fragments of the past which will, in their turn, disappear as the waves of civilisation sweep ever farther and faster over the face of the earth.

Sea Transport—from Canoe to Ocean Liner

In many parts of Africa the natives bear their burdens on their heads; the coolies of Nepal carry theirs on their backs. In China where, over many thousands of square miles, simple methods of transport are used, journeys are not reckoned in miles (or rather the Chinese equivalent thereof), but in the number of days it takes to make the journey. A place may be "six weeks travel from the coast," "three weeks from one place to another," and so on. Before you reach your journey's end you may have ridden on donkeys, ponies, been paddled across rivers on a raft or sailed up them in the roughest kind of boats. Mules are used in the mountains of Spain, yaks in Tibet, llamas in South America, camels in the desert, reindeer in the tundra. These are all interesting to us, because they are unusual to us, but no one of us would care to exchange them for our own mechanical methods of transport, except, perhaps, as a novelty for a very short time.

Long before men built roads and centuries before railroads were even a scientists' vague dream, they used rivers and lakes for inland journeys; and the great rivers of the world, the Congo, Niger, Nile, Amazon, Mississippi, Yang-tze-Kiang and many others are still important highways.

Closely connected with river transport is canal transport. Canals vary from the little things that carry tiny barges to the great ship canals that, like the Manchester Ship Canal, convert an inland town into an ocean port, or one sea with another, like the Suez and Panama Canals.

The sea has been navigated to some extent during the whole of historic time, though the first journeys were from point to point along the coast and rarely out of sight of land for any length of time. Now all the oceans are known and ships grow even bigger and bigger and carry more and more passengers and more and more goods. In every direction, size, speed and convenience show great progress. Two very important developments are the provision of refrigerating chambers for the preservation of perishable goods over long distances, and the luxurious accommodation provided for passengers.

The ocean routes remain much the same as they have always been since they were discovered, but recently a new one has been established, between Port Churchill, on Hudson Bay in Canada, and Liverpool in England, mainly to deal with the wheat from Manitoba. The wheat goes by rail to the new port, Port Churchill, and is there transferred into ocean-going steamers. The route is open only during the summer months as the bay and the northern channels are locked in impenetrable ice for the rest of the year.

Land Transport—from Trails and Paths to By-pass Roads

On land there were trails and paths before there were any wheeled vehicles at all. After wheels came into use the paths of the world were widened into roads. The state of the roads varies much from country to country. In England main roads are as smooth and well cared for as those of any town. But in pioneer countries like Australia where the population is small and the distances great, the question of expense makes it impossible for roads to be maintained at the same "billiard table" smoothness for their entire length. But even there the requirements of the

TRAVEL AND TRANSPORT ROUND THE WORLD

users of motor cars are demanding an ever increasing standard of efficiency.

Cheap cars and motor bicycles have made travelling more popular than ever. Thousands of people can now spend their holidays making tours in their own cars while the "week-end" spent out of town, in the country or at the seaside, has come to be, for a large section of the population, a recognised part of everyday life. Motor coaches and motor buses are playing an important part in linking up small outlying villages with bigger centres, making it easy for country people to get to town and for town folk to reach the country.

The motor lorry is playing a part in heavy road transport. All through the night huge lorries thunder along the highway from one end of the land to the other carrying all manner of freight. This modern road transport is heavy on the roads and demands good ones, so that they have been enormously improved in all civilised countries.

The next stage of progress in land transport came with the invention of the railway, a primitive form of which was first opened in England in 1825 between Stockton and Darlington.

Air Transport—the Development of Aviation

Within the last few years remarkable inventions have made travel by air possible. Aeroplanes, with air ships, provide the latest and the greatest revolution in methods of transport. They have been used for commercial purposes only since the war, but great things have been accomplished. It is now possible to travel by air to Cape Town or Singapore and the journey is merely a matter of days. In a short time it is possible that there will be a regular service to Australia also. Travel by air all over Europe and between Europe and England is now quite common.

There is, however, one great obstacle in the way of international flying. It is not, at the present time, permissible for the aeroplanes of one nation to fly over the territory of another, except in special cases.

Aeroplanes have been of great service in opening up pioneer countries. They will probably,

in the future, be used to serve small and scattered communities where the building and maintaining of railways would involve far too great an expense. The cost of an air service is nothing in comparison to that of a rail service, and even the heaviest machinery can be transported, in pieces.

In New Guinea there is a gold mine which has been opened solely by the use of the aeroplane. It was situated on the top of a very high mountain, and the way to it involved a week's journey through dense jungle. It was practically impossible to transport the necessary machinery and working material by road. But an aeroplane can fly there from the coast in half an hour. All the machinery for the mine and all the material for building a little township for the workers have sailed over the top of the forest to the top of the mountain, and the mine is now a flourishing concern.

To-day transport, like everything else, is being speeded up. Railways revolutionised transport in the nineteenth century. The motor car and the aeroplane have produced two much more spectacular revolutions in the twentieth. When the latter century began motor cars were a novelty used only by a few enthusiasts and commercial flying, as we have said, was not in existence until after the war.

In the old days, "seeing the world" was for the lucky few to whom wealth gave the opportunity to travel or for those others, also comparatively few, who could not resist the thirst for adventure and were prepared to sacrifice much to satisfy it. Nowadays the wander-lust is beginning to leaven the whole of every civilised community. This leads inevitably to a wider understanding of the point of view of other people, and in the long run must influence very considerably the attitude of one country to another. But travel also involves responsibilities, especially when Western civilisation meets Eastern.

Finally, although this is a survey of the world to-day, experiments with the stratosphere are taking place which scientists, such as the intrepid Professor Pickard, believe will, in time, open up new methods of travelling through space. This is pure speculation, however, and we must leave the future to reveal its own wonders.

DAPHNE CLAIRE.



G.P.A.

WOMAN—THE EARLIEST METHOD OF TRANSPORT !

Woman was man's first beast of burden, carrying his scanty belongings for him. She would strap her baby on her back and carry the family possessions on her head and elsewhere as she could best manage. That her emancipation is not yet universal amongst primitive peoples is clearly shown by this picture of a woman in Africa, complete with baby and chattels.

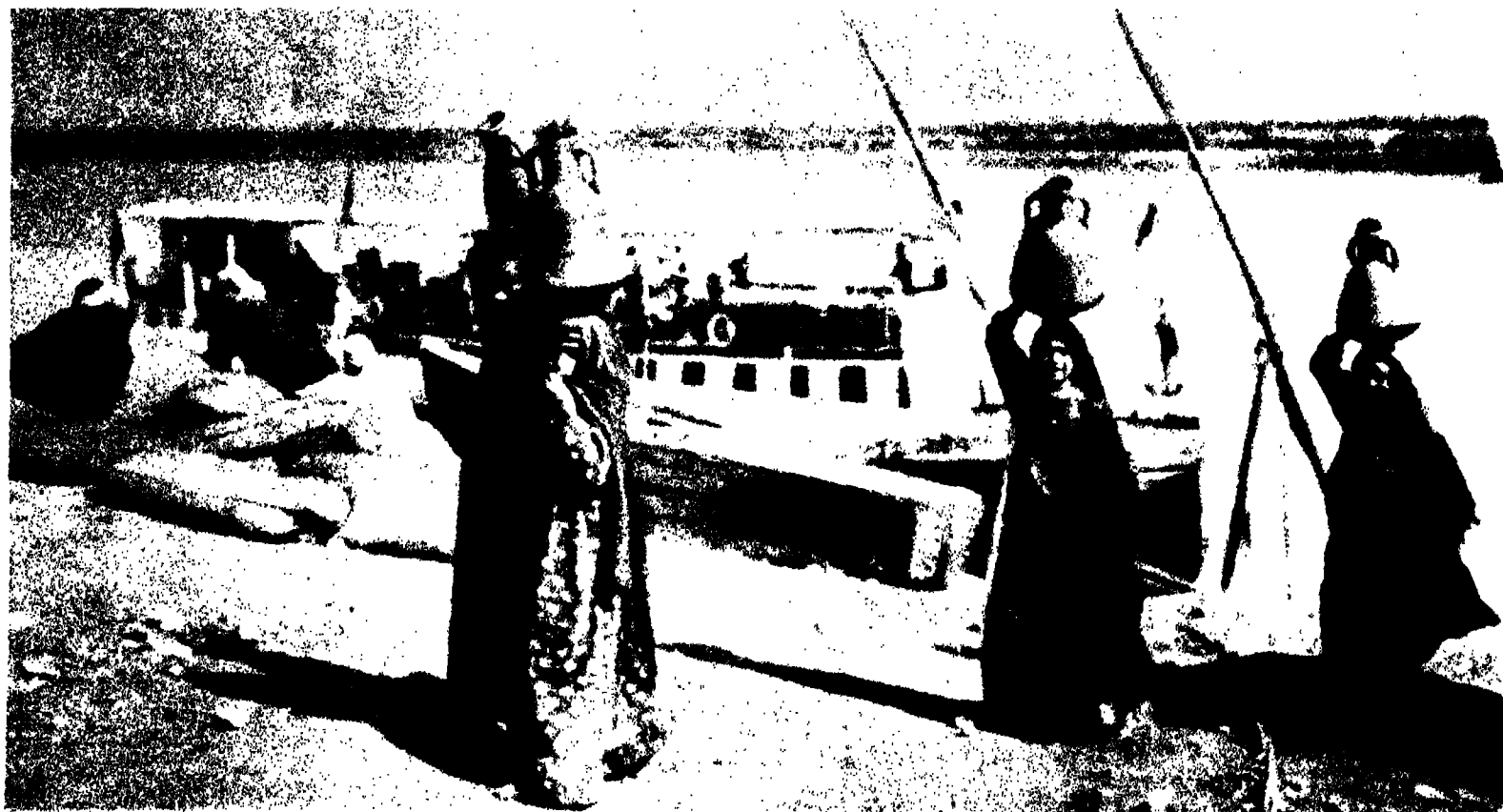
TRAVEL AND TRANSPORT



Indian Railway Bureau

THE HUMAN DELIVERY VANS OF INDIA

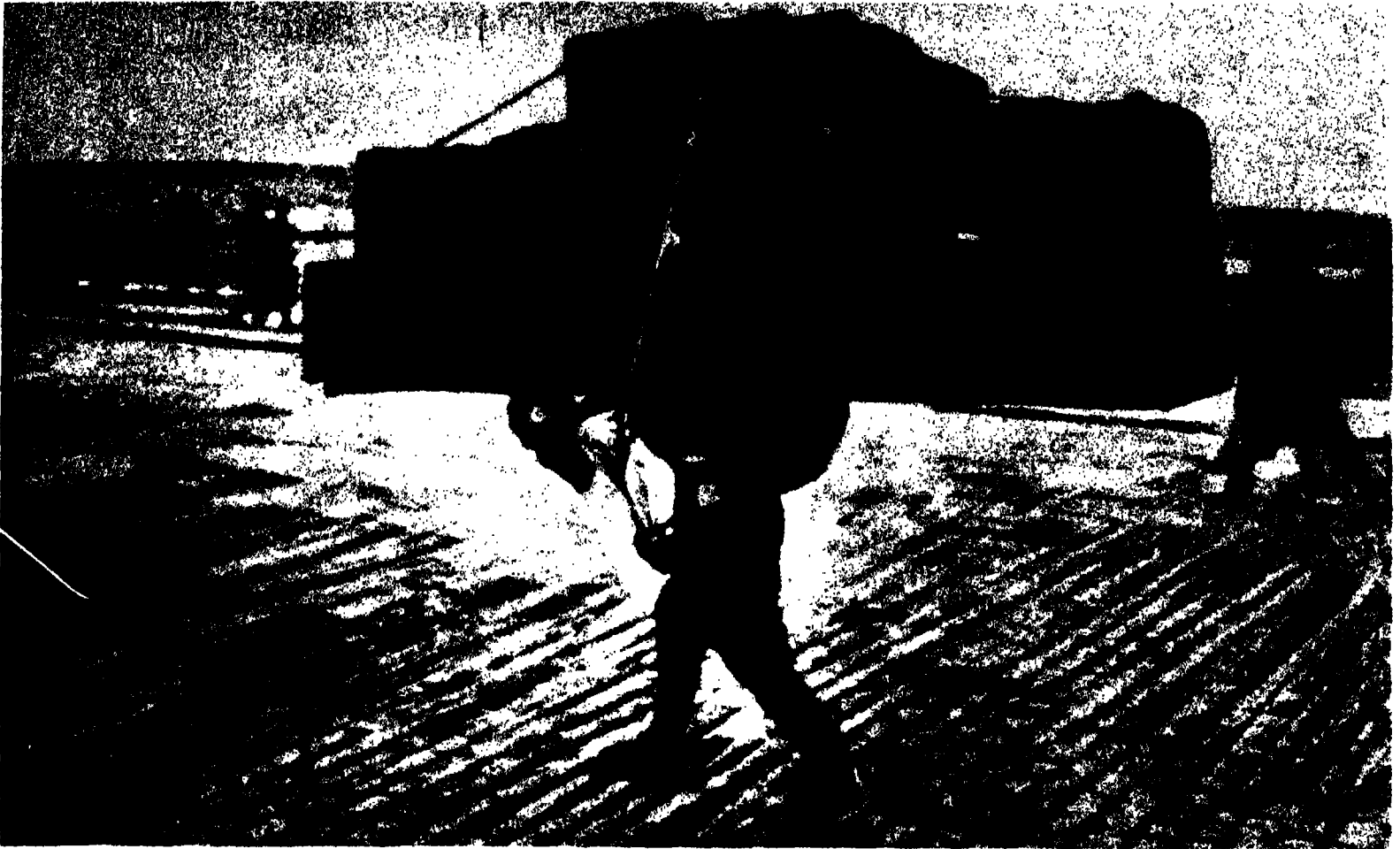
Human transport is still common in many parts of the world. Here are two coolies at the popular hill station of Simla in India, heavily laden like the pedlars of the "Arabian Nights." In India even a grand piano may be carried a couple of miles on the heads of eight or nine coolies. The average coolie finds actual lifting more difficult, since his stomach muscles are often weak. Apart from this they frequently carry the white man in chairs from one hill station to another.



Royal Mail Steam Packet Co.

EGYPTIANS CARRYING WATER FROM THE NILE

Comparatively light things, such as a jar of water are carried on the head. This results in an uprightness and grace uncommon amongst people who carry their burdens in their hands. An interesting parallel is afforded in the training of the mannequin, who is instructed to balance a book on her head to improve her deportment. Thus West learns from the East.



E.N.A.

THE BALANCING ACT OF A KURDISH PORTER

As with the camel, careful packing makes it possible for this Kurdish "Hamal" or porter to carry such an enormous load. It is balanced on his head and a thick pad on his back, and once he starts he can carry a load for considerable distances.



E.N.A.

SEDAN CHAIRS—THE TAXI-CAB OF HONG KONG

In spite of the rapid inroads of Western civilisation, Hong Kong still retains the sedan chair—the human taxi-cab. The coolies are trained to walk out-of-step in order to prevent jogging their passenger. The front coolie is wearing a raincoat made of straw and the sedan chair has its registration number, which points out that the owners are licensed carriers.

TRAVEL AND TRANSPORT



E.N.A.

WHEELBARROWS OF OLD CHINA

These typical one-wheeled farmers' market carts or wheelbarrows are used by Chinese farmers for carrying their produce from fields to market. Often these are trundled sixty or seventy miles. They are sometimes used in the cities as taxis.



Wide World

INVALID CHAIRS IN CZECHOSLOVAKIA

In old Czechoslovakia they have a quaint system of carrying sick people for a cure to Bad Pistyan in sedan chairs, forming a procession which is called the "procession of the Infanterists." The porters are seen dressed in the national costumes.



Associated Press

HORSE-DRAWN SLEIGHS IN A FIELD OF SNOW

In Rumania the winter snows cover the ground with a mantle of spotless white. Travelling by horse-drawn sleighs is the only effective method of transport. Often the sleighs become embedded in the snow, and the horses have to be assisted.

TRAVEL AND TRANSPORT



E.N.A.

A PACK TRAIN IN A MOUNTAIN HIGHWAY

In the mountainous lands of Venezuela in South America, donkeys are used instead of horses for travelling over the hard and often broken roads. Here we see a pack train of donkeys making their way to the coast, each with a heavy load.



E.N.A.

THE REMOVAL VANS OF THE EAST

Moving house in the desert is no easy matter, but assisted by his greatest friend, the camel, the Bedouins shift from place to place, to sell their goods at markets. Great skill is required to load a camel so that allowance is made for his swaying gait.

TRAVEL AND TRANSPORT



Governor and Committee of the Hudson Bay Co.

THE HORSE-DRAWN "TRAVOIS" OF THE RED INDIAN

Where animals are used, greater loads may, as a rule, be moved. The Red Indian uses a "travois," that is a couple of poles which trail behind his horse. On this he packs his camp equipment. The "brave" rides on the horse; the squaw walks.



Anglo Persian Oil Co.

ANCHORING THE SHIP OF THE DESERT

Camels are the transport beasts of arid lands, as they can exist for a number of days without drinking. Those shown in the picture are hobbled to prevent them from straying. They are here seen in the caravan area of the Persian oil-field.

TRAVEL AND TRANSPORT



Swedish Travel Bureau

THE SURE-FOOTED PACK HORSE

Pack horses are mostly used in mountainous countries where the roads are too rough and narrow to take a vehicle. The one in this picture is loaded with supplies for men working in the Swedish forests between the trees of which are paths.



G.P.A.

EVEN AN OX-WAGON HAS A MASCOT ON ITS BONNET

Oxen are used to draw heavy loads and pull carts in many parts of the world. This picture is from Ceylon. Note the tiny windmills that have been fixed to the top of the hood. They are supposed to bring good luck and to scatter the evil spirits.

TRAVEL AND TRANSPORT



E.N.A.

WATER CARRIERS OF INDIA

Patient oxen with water skins slung across their backs, present an everyday scene in the streets of India. Water in many districts is precious, and is sold in the streets in the same way that milk and ice cream are sold in other countries.



Associated Press

AT THE "CONCOURSE OF THE SPIRITS," PEKING

The Imperial Necropolis, or burial ground, of Peking is called the "Concourse of the Spirits." The elephant is carved out of a single block of granite. The horse-drawn cart with its quaintly improvised awning is typical of this district.

TRAVEL AND TRANSPORT



E.N.A.

CARRYING WATER OVER AN ARID WASTE

In Antofagasta in the nitrate fields of Chile, the land is so dry that barrels of water have to be carried over long distances to the miners who are working at a distance from their homes. Here is our old friend the donkey dragging a barrel.



Wide World

A LAPLAND CHILD HAS ITS OWN TEAM OF REINDEER

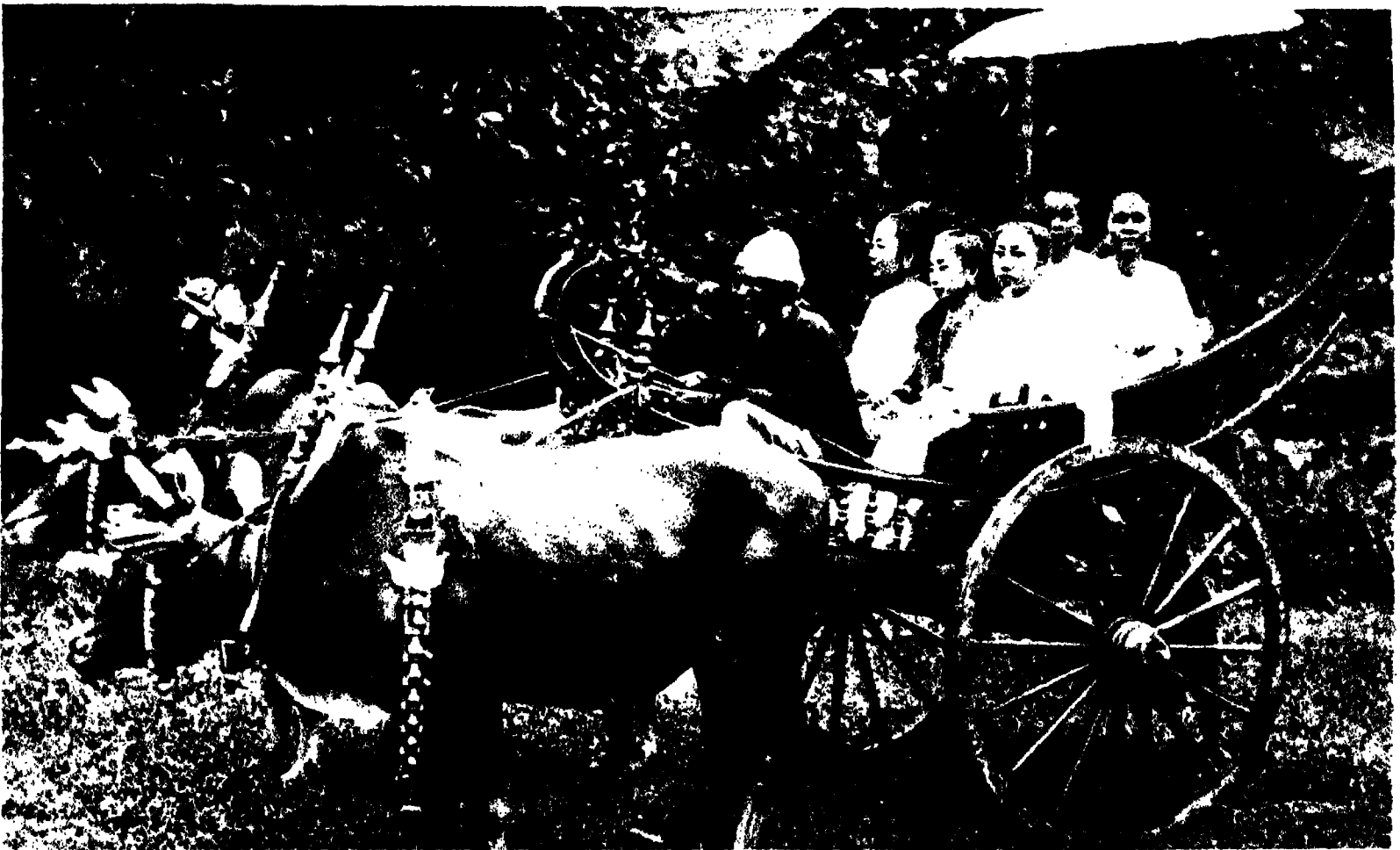
Just as the Indians in America's north, the Laplanders are a nomadic tribe in Sweden's north. When moving the Mongolian Laplanders place their children in a basket which is hung across a reindeer's back. Here is a baby in its basket cradle.



E.N.A.

LLAMAS—THE CAMELS OF SOUTH AMERICA

In addition to the famous statue of Christ which stands upon one of the highest spots in the Andes, wayside crosses are to be found in many parts. Here we see llamas passing such a cross. These animals are not only used for transport—covering about fourteen miles a day—but are valuable for their wool. There is a very strict ban upon the export of these animals.



Associated Press

A BURMESE CARRIAGE AND PAIR

Hansom cabs and "growlers" have almost gone from our streets, but in **Burma** a carriage is still a popular form of conveyance. This quaint oxen-drawn wagon is taking a party to a picnic. Notice the mascot over the heads of the oxen.

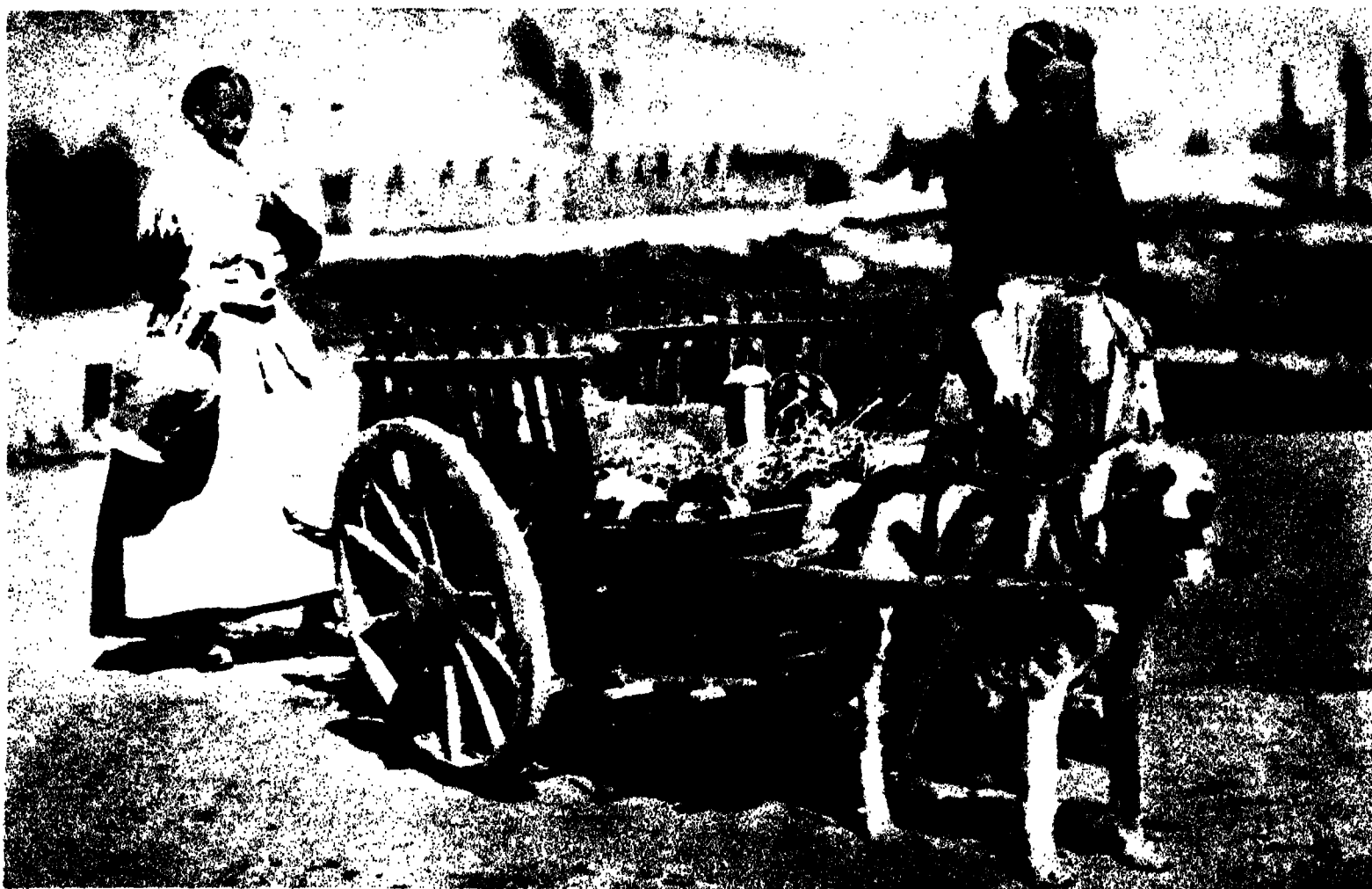
TRAVEL AND TRANSPORT



E.N.A.

TARTARS WHO DRIVE CAMEL CARTS

Camels are found in all sorts of unexpected places, and not only in Egypt as is often imagined. They are particularly useful where long distances have to be covered over country which is sparse in grass and lacks water. In Russian Central Asia the Tartars use them for carrying coal over the steppes. The camel's height necessitates the small front wheels of the cart.



E.N.A.

WHEN MILK CARTS ARE DRAWN BY DOGS

In many parts dogs are used for light transport. In Belgium, for instance, they take the place of horses between the shafts of a low wooden milk cart. But training is necessary to prevent them from wandering off to play or fight with other dogs.

TRAVEL AND TRANSPORT



Associated Press

ON THE ROAD TO DELHI

Camels are widely used as beasts of burden in the Central Provinces of India. They are bad tempered animals, however, and since they can kick in any direction and bite on the slightest provocation, they have to be treated with care.



E.N.A.

MOVING DAY IN FYZABAD

India is a land of strange and wonderful contrasts—enormous riches and abject squalor. In this ramshackle cart are all the worldly possessions of these two natives of Fyzabad, who are moving house. Note again, the angle at which the shafts are set.

TRAVEL AND TRANSPORT



G.P.A.

WITH MOTOR TRUCK IN UNEXPLORED AFRICA

Motor cars are now used in almost all parts of the world, but often they get into serious difficulties, especially in swampy lands. This expedition in British East Africa meets with an almost every day occurrence. A squad of natives, however, will soon have the truck out of the hole and on its way. Natives are impervious to the sun, but the white men wear helmets.



Wide World

THROUGH UNKNOWN CORNERS OF THE HIMALAYAS

The expedition is passing through a narrow and almost comparatively blocked valley of the Himalayas. Horses would find such conditions too strenuous, so mules, much hardier animals, are used. They carry enormous loads and seldom make a false step. They are stubborn creatures, however, and difficult to move should they once make up their minds to stop.



E.N.A.

A SIXTEEN-IN-HAND OF SIBERIAN DOGS

On the ice plains of North America travel is both a hazardous and difficult undertaking. Here man travels by sledge drawn by well-trained dog teams. These dogs are exceptionally strong and have extraordinary staying power. Relatively high speeds are achieved over level ground. This picture was taken in desolate Alaska, one of the most inhospitable lands.

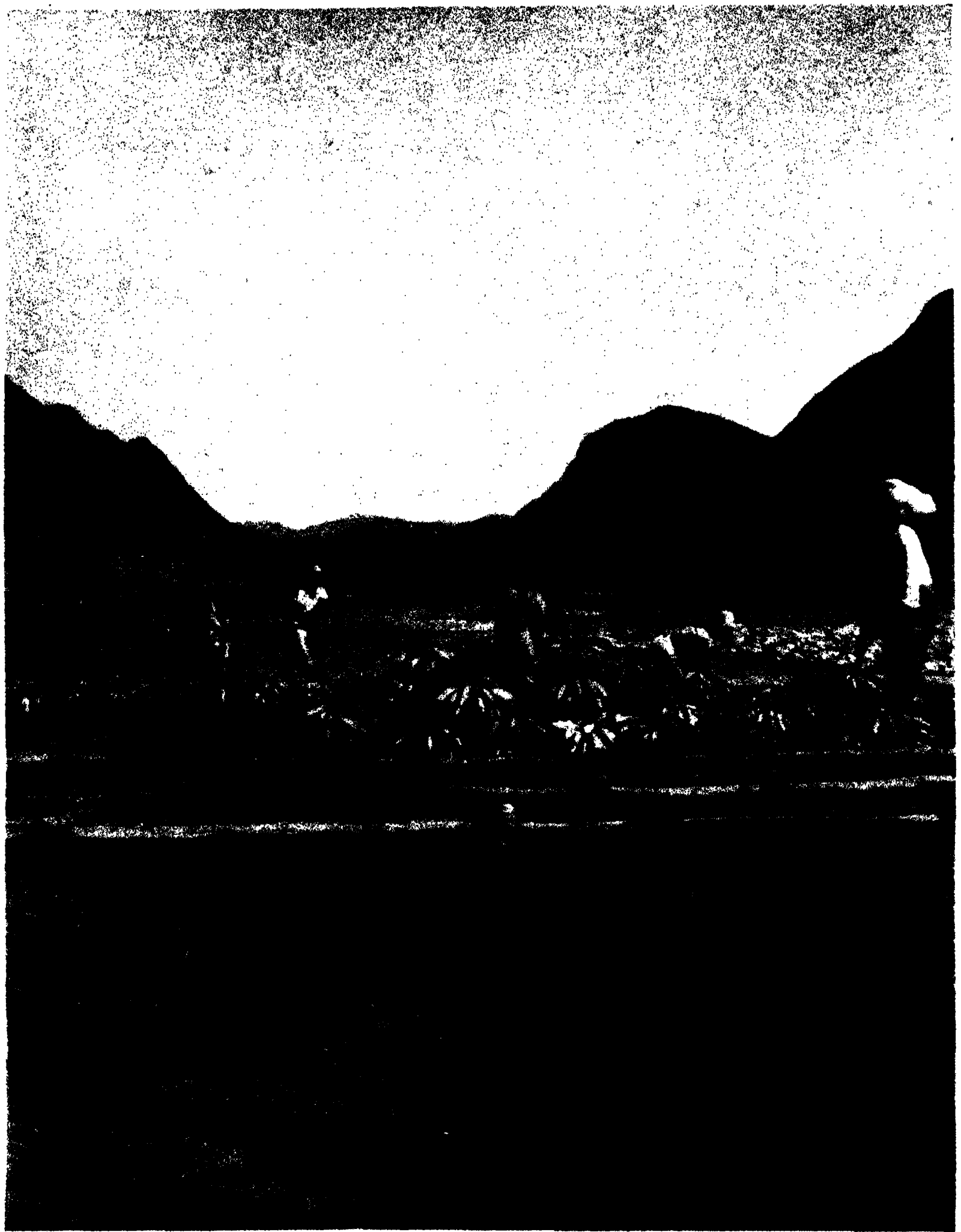


E.N.A.

RAFTS MADE OF COCONUTS

The natives of the Philippine Islands use what must be one of the strangest kinds of river craft—the rafts are composed entirely of coconuts strung together on a rope ring. They are circular in shape and they are seen here floating down the Pag Sangan river in the Island of Luzon. Coconuts, like dates, grow generally at the top of very high palm trees.

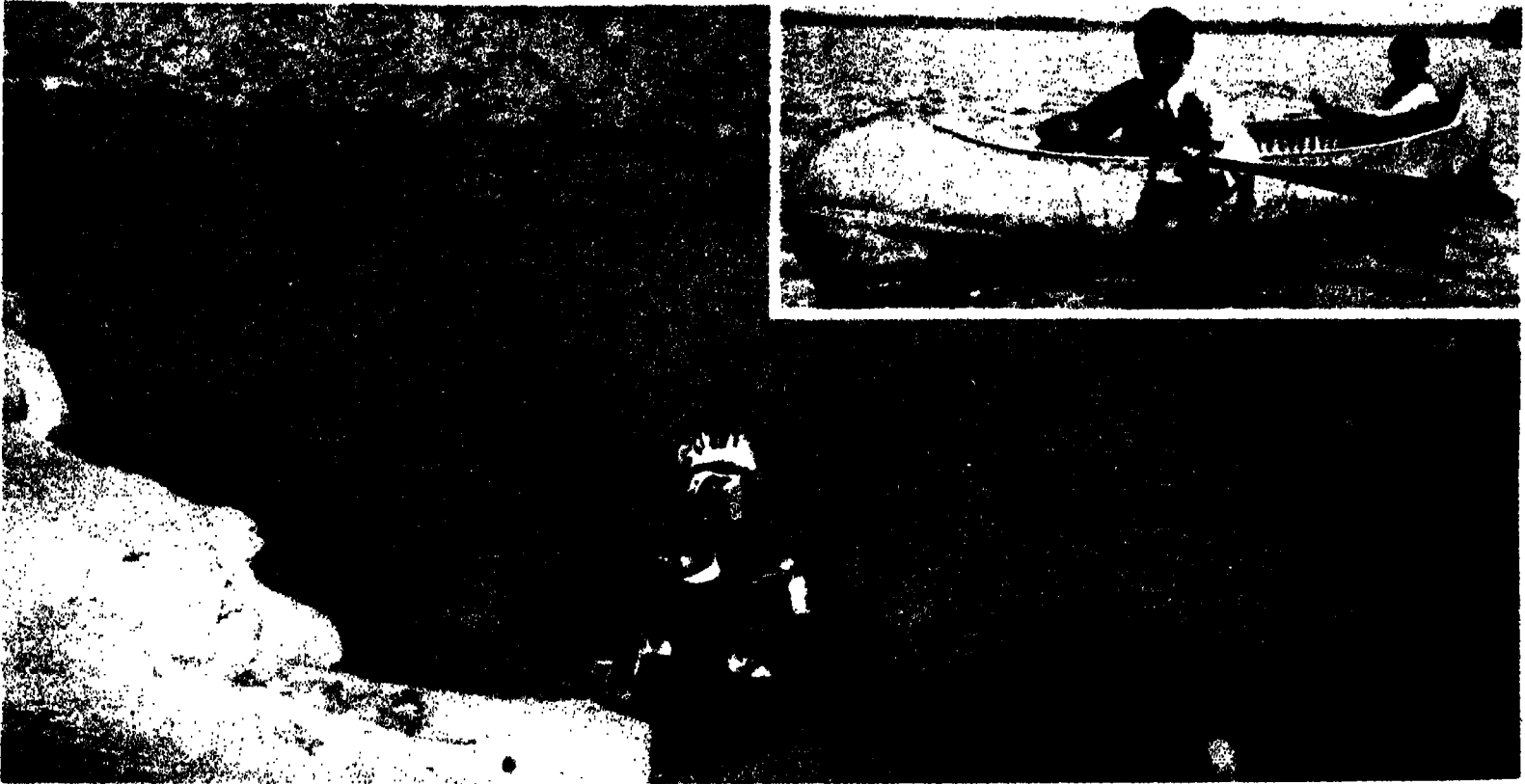
TRAVEL AND TRANSPORT



E.N.A.

A GIGANTIC RAFT IN THE PHILIPPINES

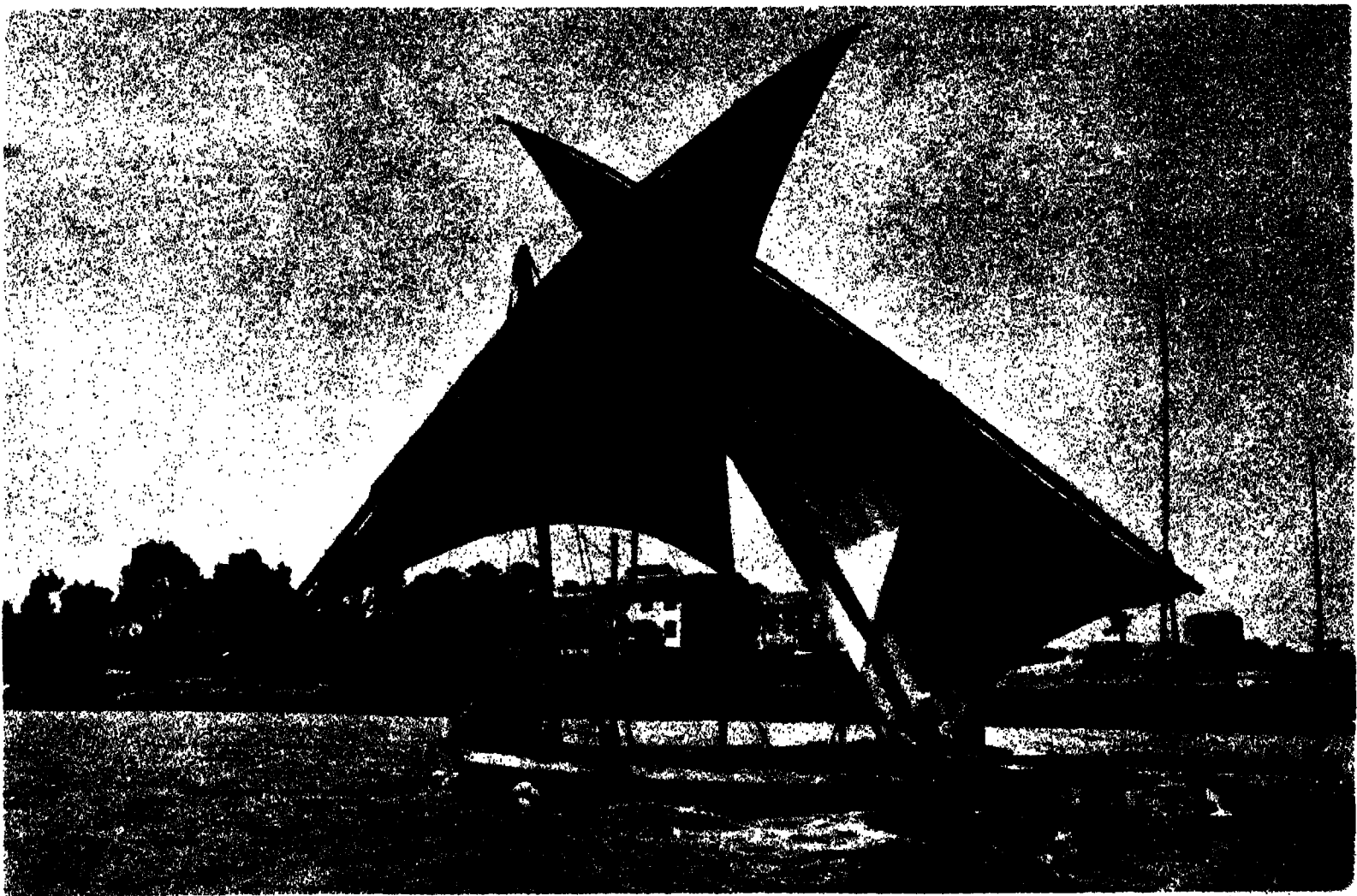
Maize is to be found in most of the monsoon lands. Here we see Philipinoes pulling maize across the Abra River in the beautiful island of Luzon during the "Nortaza" or N.E. monsoon. This is harder work than punting a boat on a river.



Anglo Persian Oil Co.

A RAFT MADE OF BLOWN-UP GOAT-SKINS

Rafts, like boats, are of all kinds of materials, sizes and shapes. This one, called a "killick," in use on the River Karun, in Persia, is supported by inflated skins. *Inset*: A red Indian in a birch-bark canoe, which he propels with much skill!

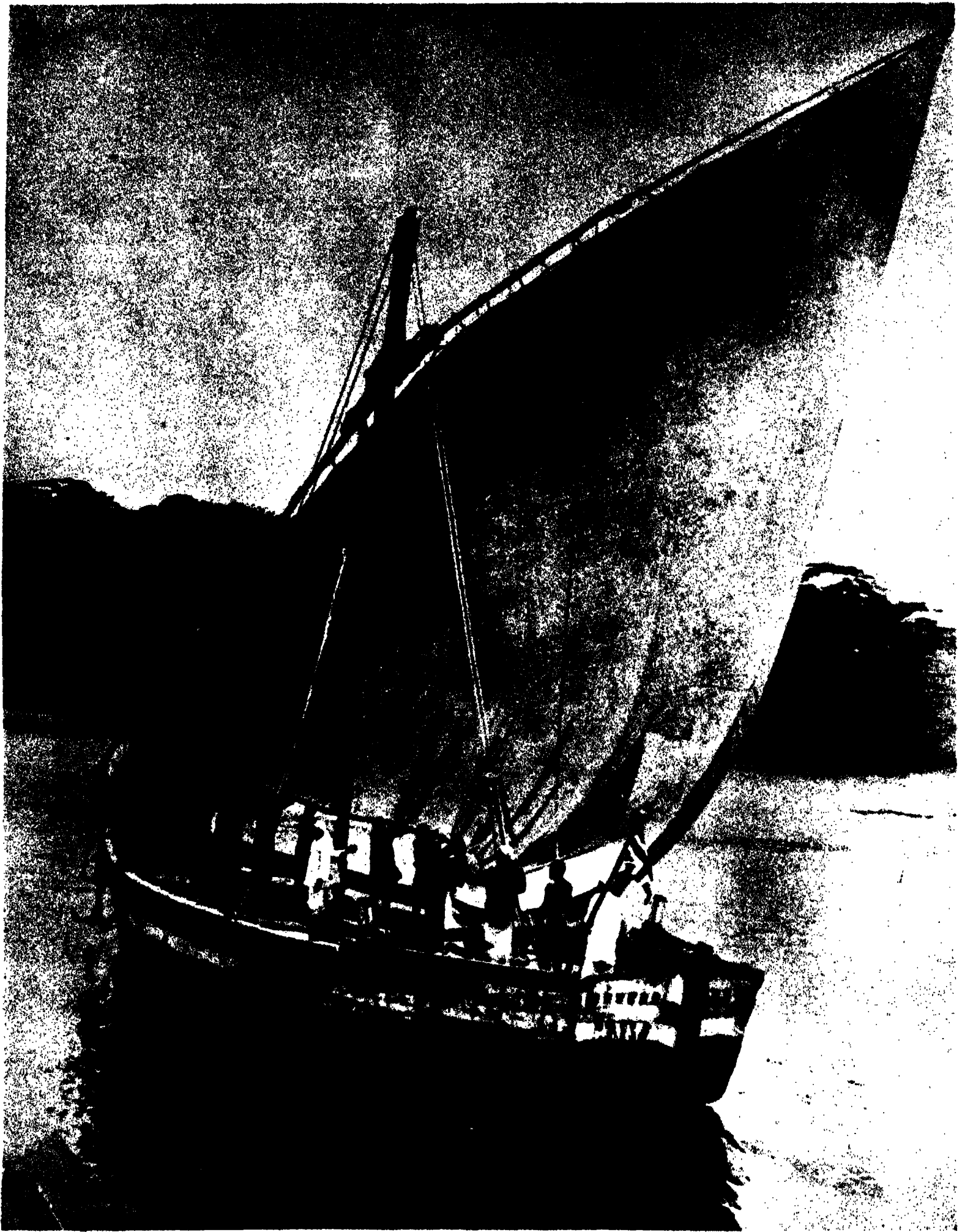


Canadian Pacific Railway.

A PICTURESQUE FELUCCA ON THE NILE

Because the Nile flows, in places, in a kind of deep trench that it has cut for itself, the river boats need tall sails that reach, above the top of the trench and so catch any breeze that blows. Feluccas are also to be seen in the Mediterranean Sea.

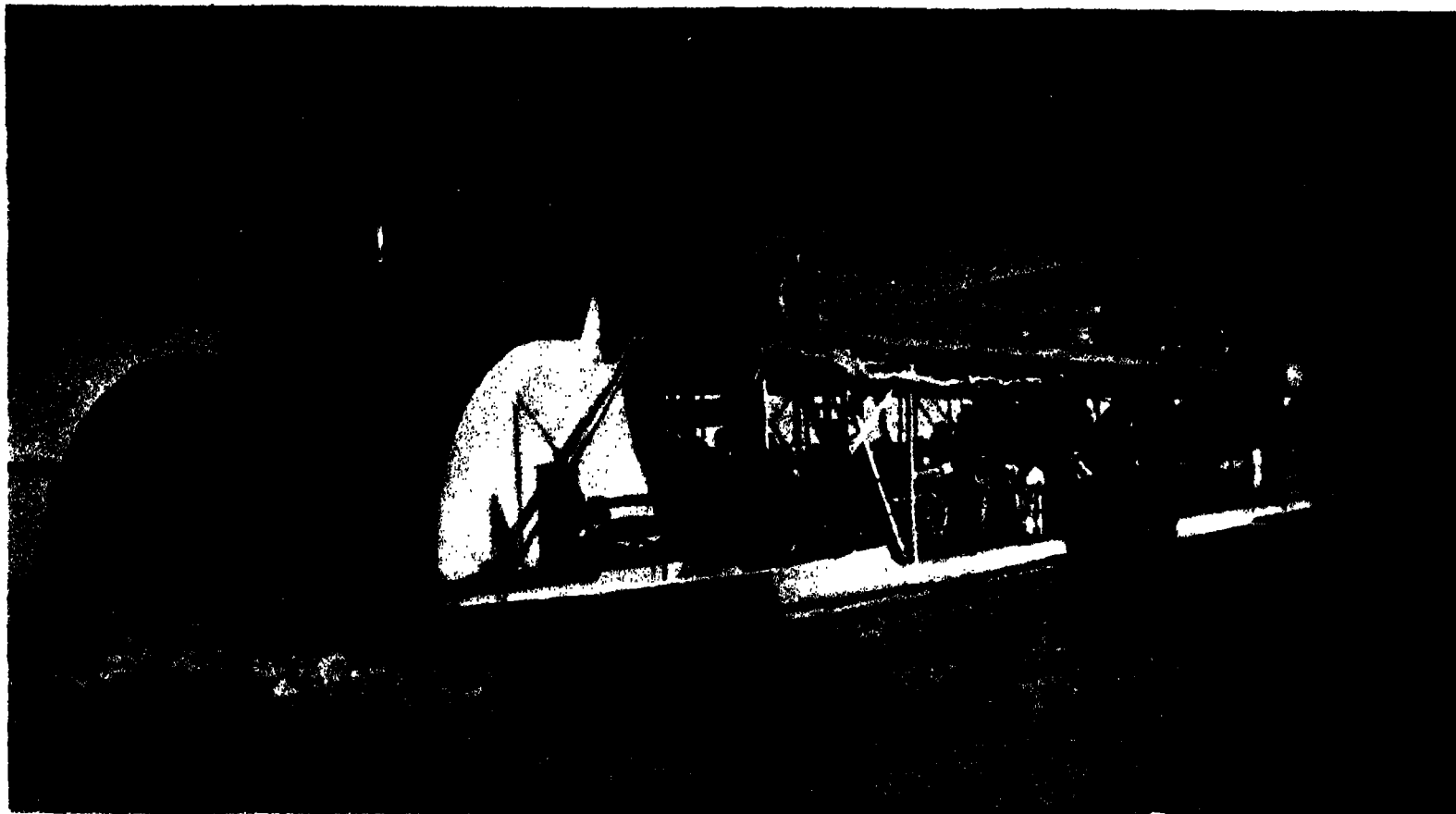
TRAVEL AND TRANSPORT



Courtesy, Canadian Pacific Railway.

A NATIVE DHOW ON THE VICTORIA NYANZA

Water as a means of transport has been used by man ever since he first risked his life by leaving the land. In spite of all modern inventions, however, the all-too-rare sailing ship possesses a majesty and thrill peculiarly its own. The sails of this Arab dhow are so designed as to catch the maximum amount of wind and are skilfully handled by the native crew.



Associated Press

MECHANICAL TRANSPORT INVADES THE INDUS

The River Indus in Central India is an important highway, and the influence of the West has led to quicker and more effective transport than the native craft. These paddle-boats are open all round, but there is an awning which can be let down.



German Railways Bureau

WATER GIPSIES OF GERMANY

Barges are a common means of conveyance in countries where there are rivers and canals. This view shows barges of several different sizes at Hamburg, one of the oldest and most important centres of commerce on the Continent of Europe.

TRAVEL AND TRANSPORT



THE WATERWAYS OF WINDMILL-LAND

Holland is pre-eminently a country of canals and barges. Even the farmer may take his hay to the haystack by means of a little barge. When the unloading is finished, the boat will be "parked" by the side of the owner's water-side field.

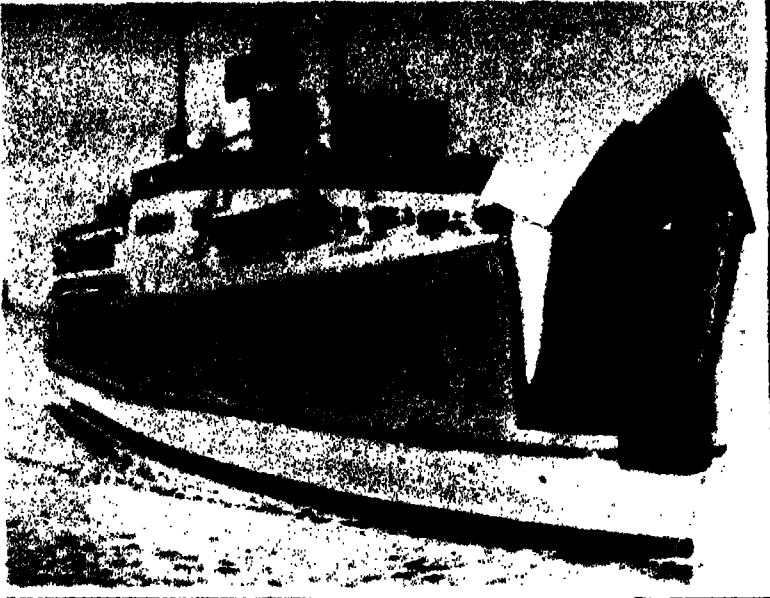


RUSH HOUR IN THE AMSTERDAM FERRY

Nederland Line

Ferry boats for passengers are in Holland, with its network of waterways, as common as bicycles in England. Note the queues waiting for the next appropriate ferry boat. A service of river buses on the Thames has lately been suggested.

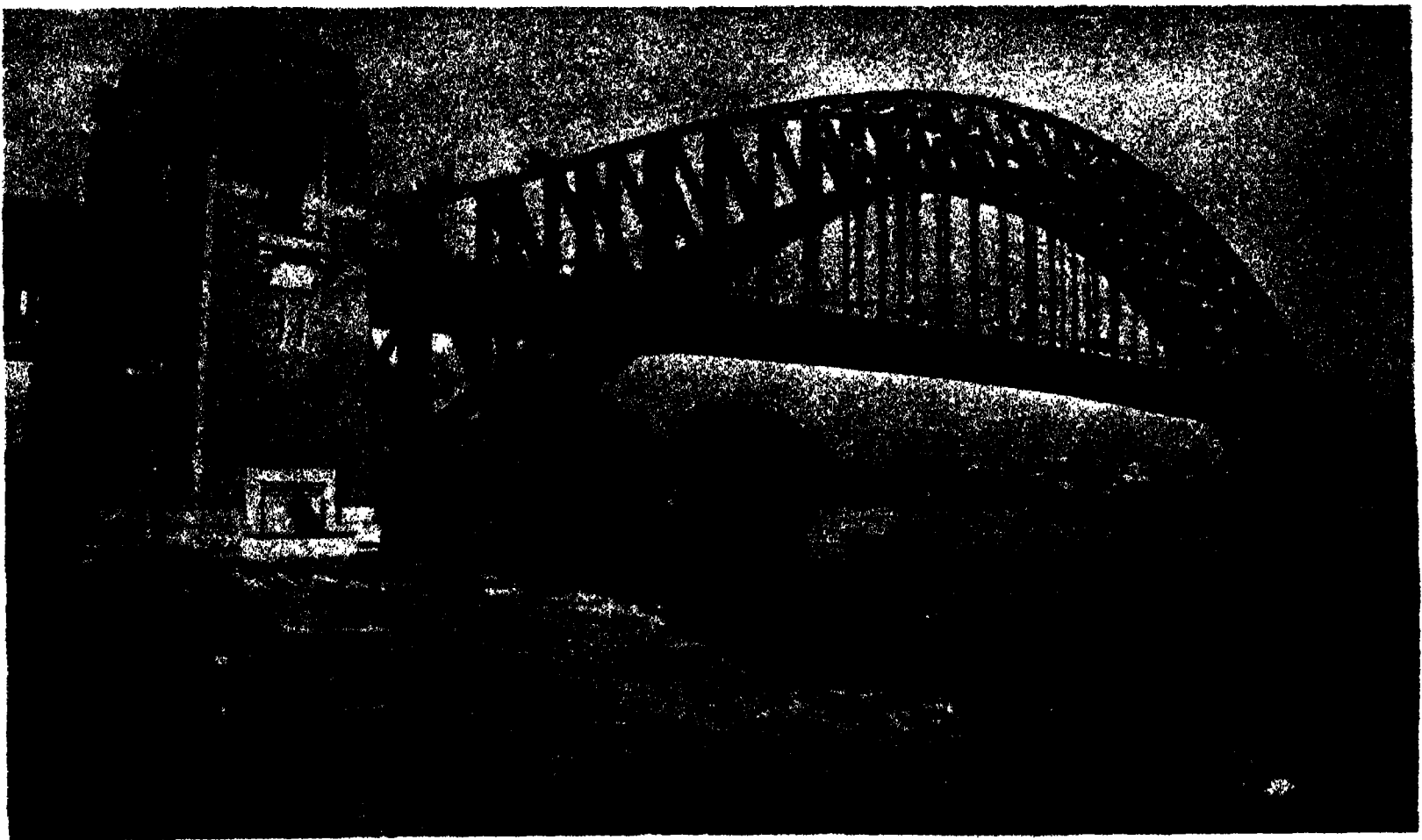
TRAVEL AND TRANSPORT



German Railways

FERRYING TRAINS ACROSS THE WATER

In a number of countries train ferries are common. The smaller picture shows such a train ferry which runs between Denmark and Germany. It will carry 17 or 18 goods wagons and 7 four-axle fast passenger train carriages. Inset : At sea.

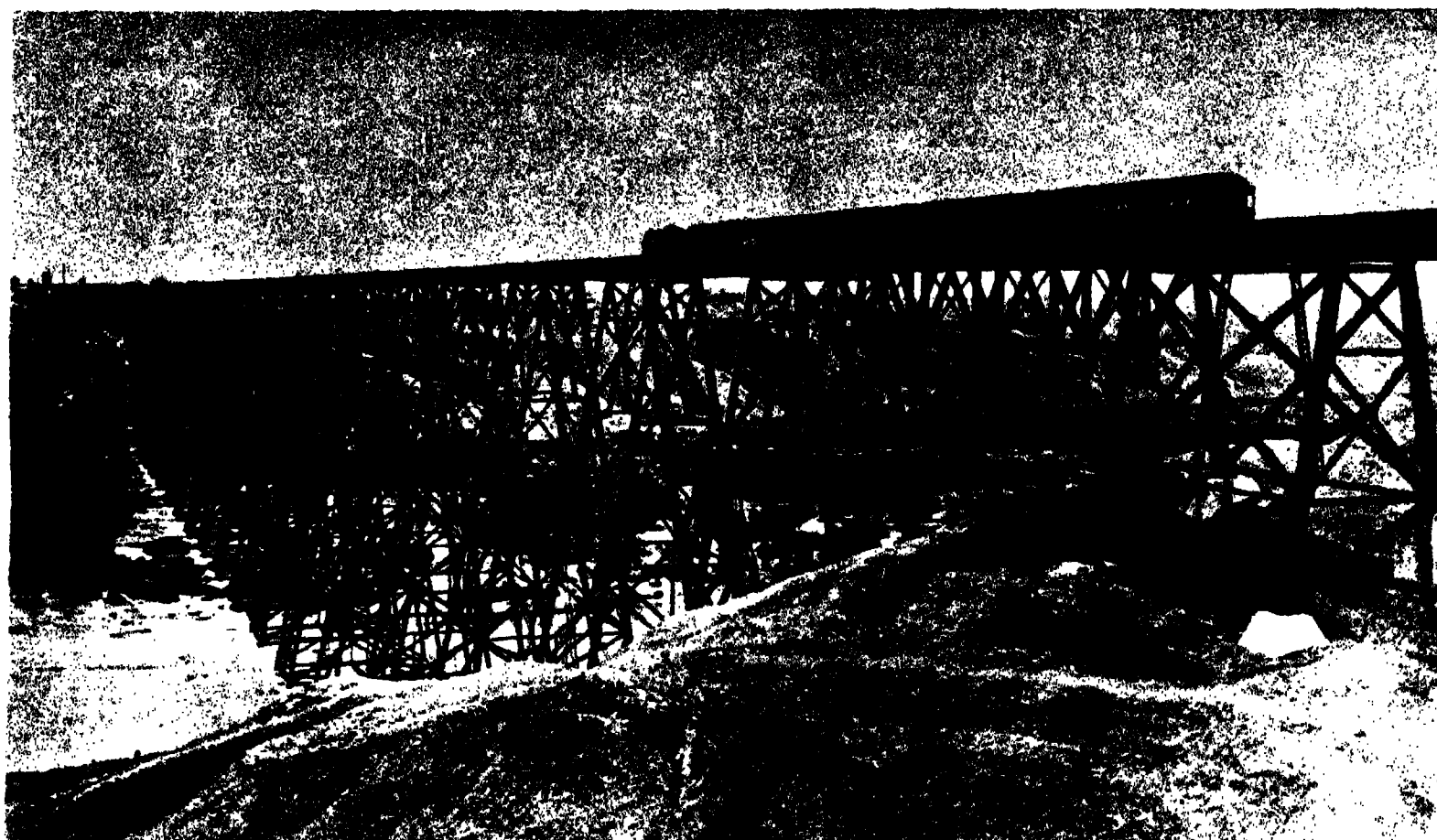


N.S.W. Govt.

THE RECORD SPAN OF SYDNEY HARBOUR BRIDGE

Bridges are an important feature in land transport system. The recently opened bridge which joins the city with the northern side of Sydney harbour is the largest single span bridge in the world. The arch span is 1,680 feet long.

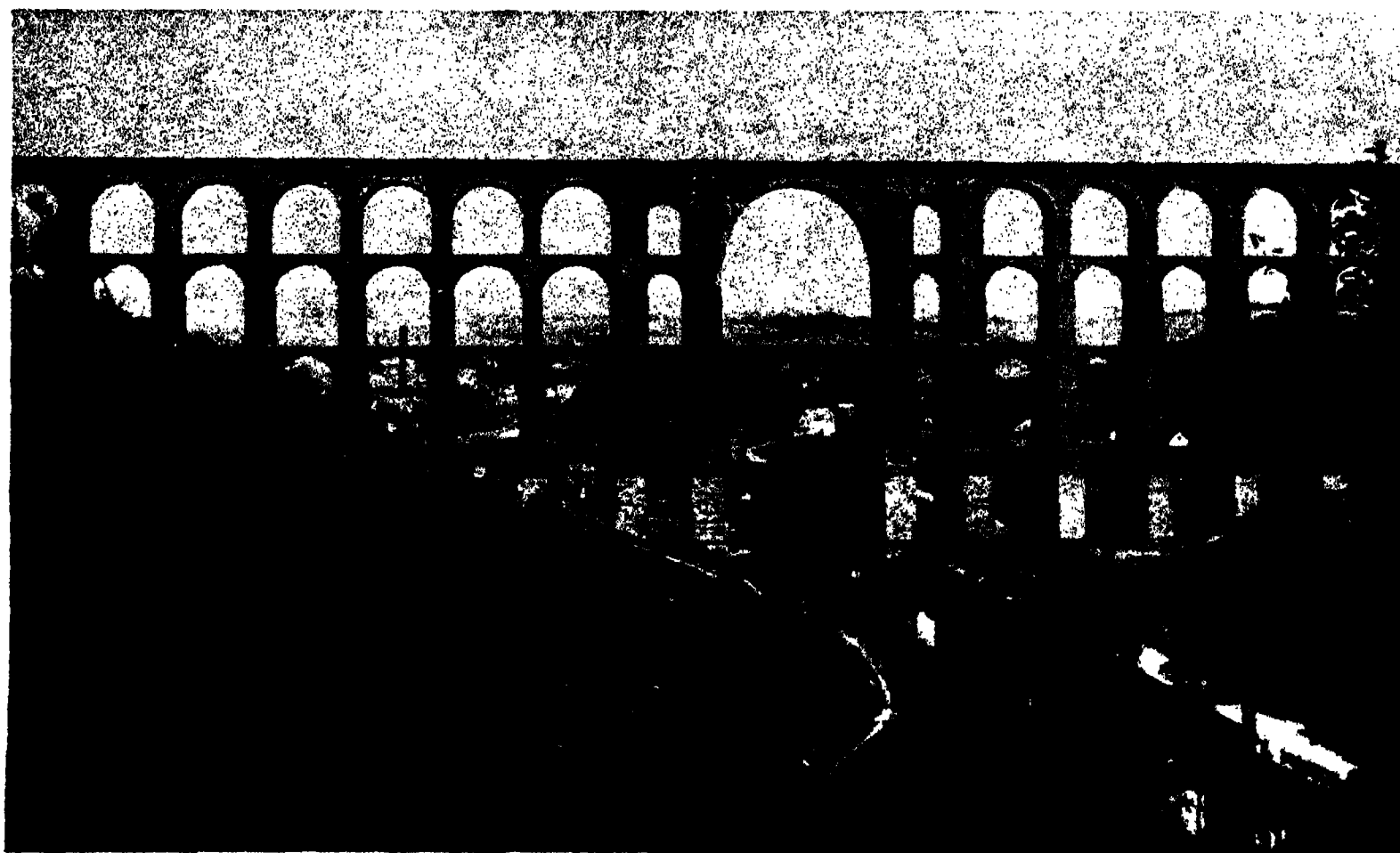
TRAVEL AND TRANSPORT



Canadian Pacific Railway

THE STEEL BRIDGE OVER OLD MAN RIVER, ALBERTA

Here is another type of bridge. It is of steel, like that across Sydney harbour, but it is supported from beneath. It is the Lethbridge Viaduct at Alberta on the Canadian Pacific Railway. British engineers have always excelled at bridge construction.



German Railways

A BRICK BRIDGE OF 80 ARCHES

This is a railway bridge across the beautiful Goltzsch Valley, near Plauen, in Saxony. It bears a very close resemblance to the old aqueducts built by the ancient Romans, the ruins of some of which are still to be seen standing in Provence.

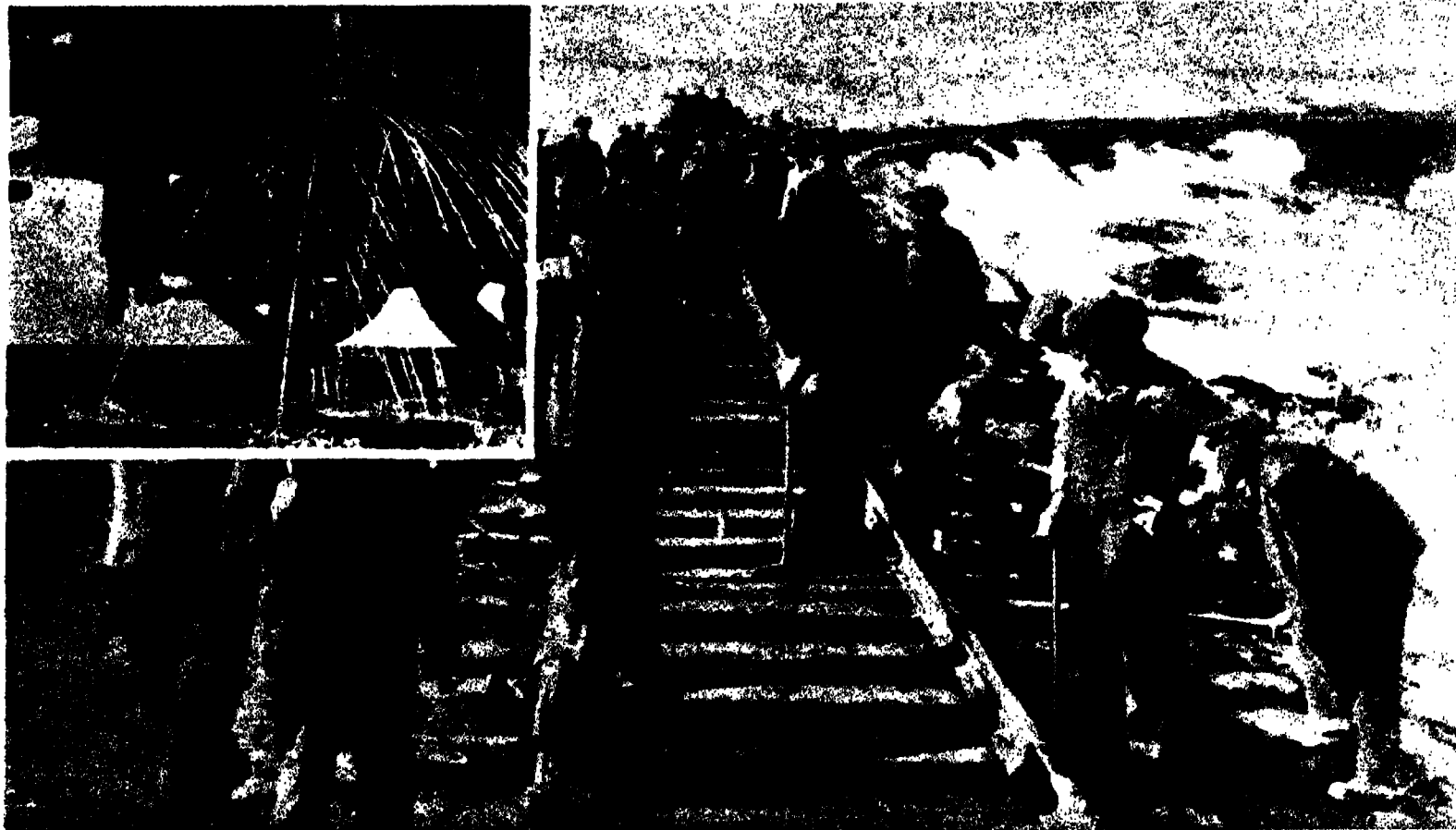


German Railways

A RAILWAY STATION INSIDE AN HOTEL

From the Schneefernerhaus hotel, in the Bavarian Alps, you may travel to a height of 9,000 feet up the mountain side in the Zugspitze aerial railway. Thrills are plentiful on this line—especially when winter gales whistle round the snow-bound precipices. *Inset:* The tiny carriage nears the end of its adventurous journey up to the top of the cloud-capped mountain.

TRAVEL AND TRANSPORT



Courtesy, Canadian National Railways

LAYING A TRACK IN CANADA

The comfort and safety of passengers depends very largely upon the skill with which the permanent way is laid. Spaces between each section of rail must be left to allow for expansion and contraction. The sleepers are covered with creosote to prevent rotting. *Inset* : Weed killer is sprayed from a tank to keep the clinkers between the sleepers clear of weeds.



Swiss Federal Railways

TWIN JETS OF SNOW AND STEAM

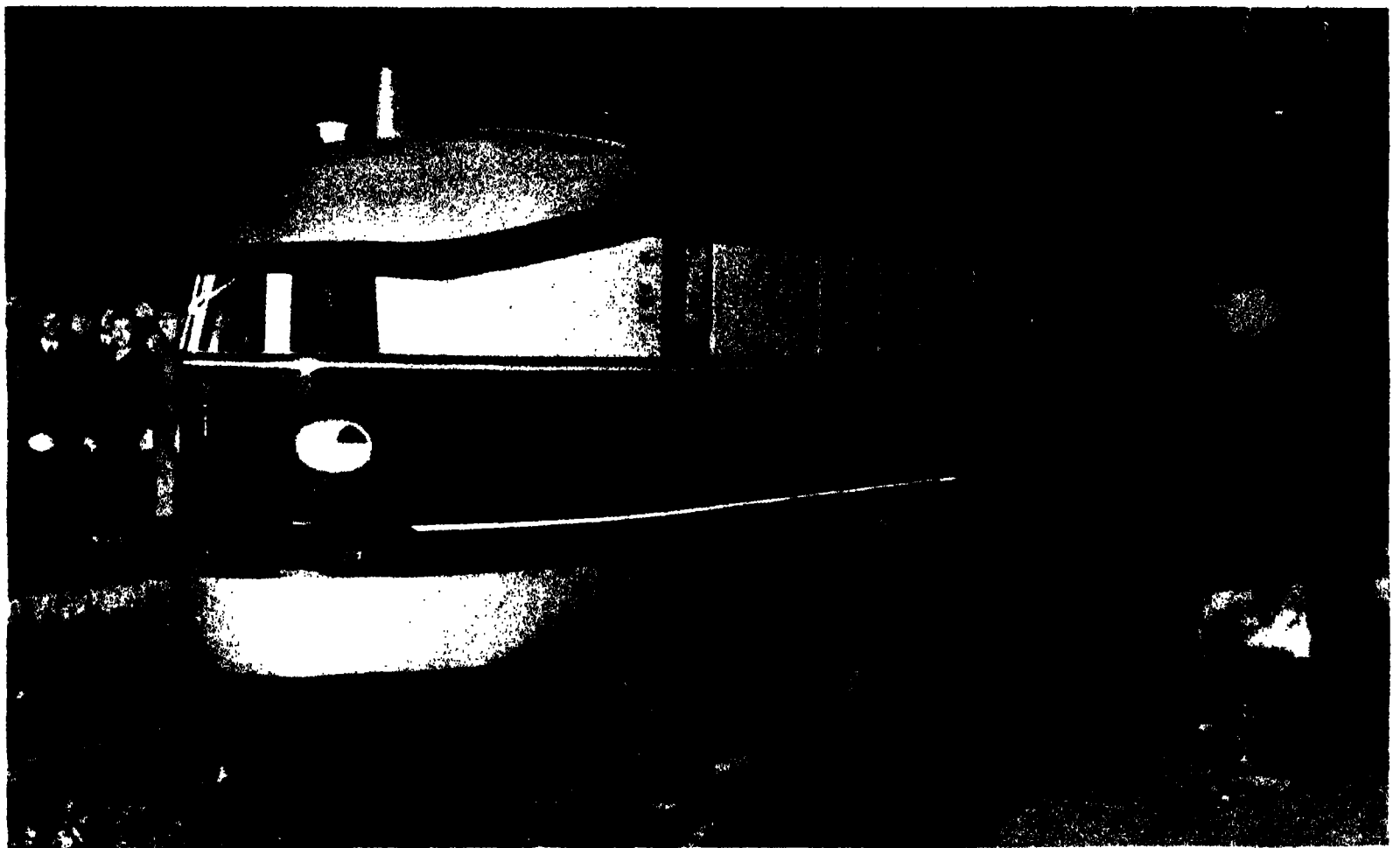
Breast high in frozen snow this powerful snow plough fights its way through the drifts at Alp Grun in Switzerland. A steel fan revolves at high speed in front of the engine, scooping away the snow and throwing it to one side in an icy fountain.



Courtesy, L.N.E.R.

THE MOST FAMOUS TRAIN IN THE WORLD

The "Flying Scotsman," the world's crack express, covers nearly 400 miles between London and Edinburgh non-stop in the summer months. Besides the usual restaurant-car, this train has a cocktail-bar, a hairdressing saloon and retiring rooms.

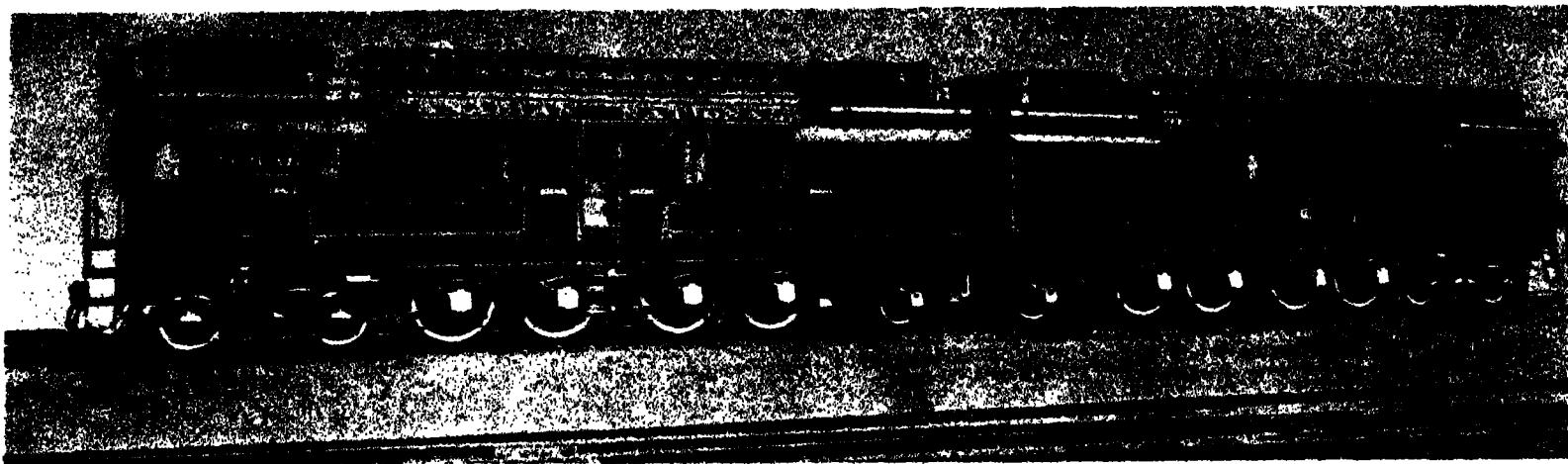


German Railways

THE FASTEST TRAIN IN GERMANY

The Flying Coloner travels between Berlin and Hanover at an average speed of 82.4 m.p.h. The maximum speed it achieves is 99.4 m.p.h. Everything about it is streamlined and all projections smoothed in order to avoid wind resistance.

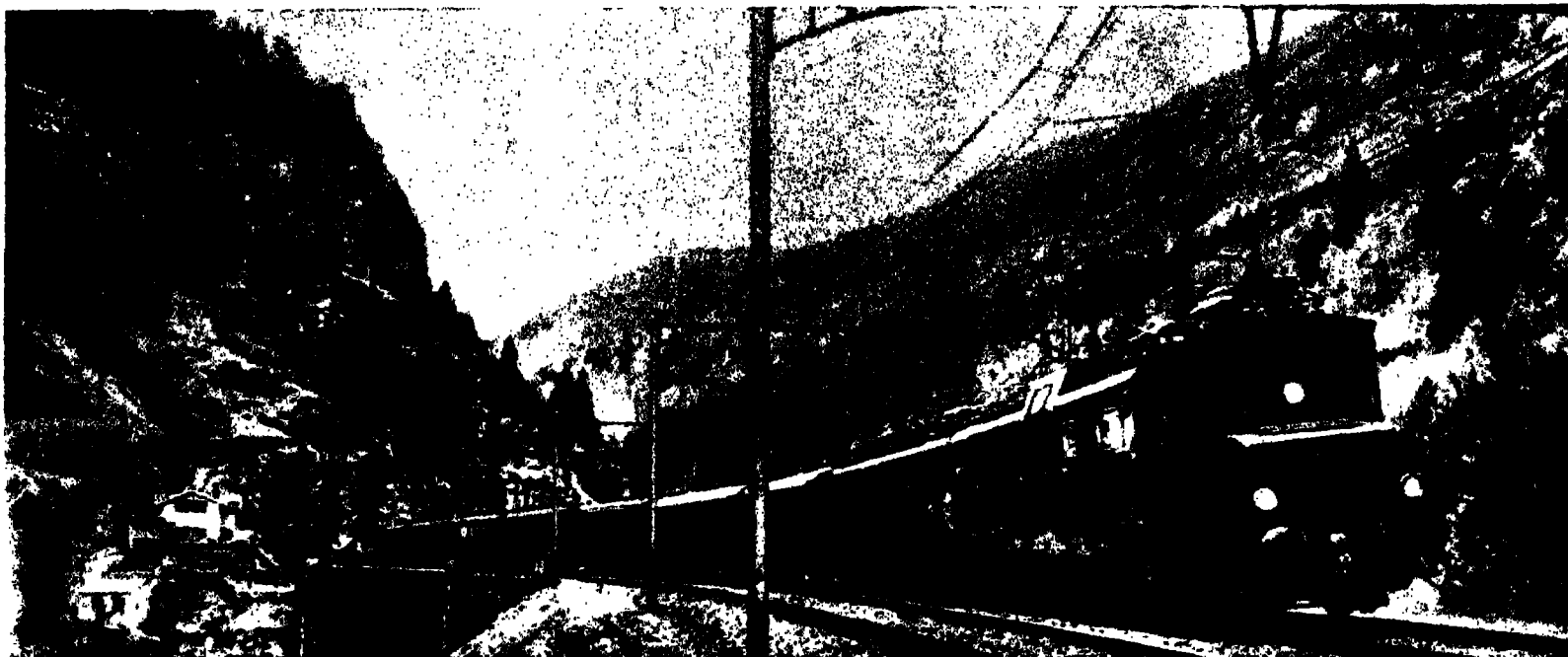
TRAVEL AND TRANSPORT



Canadian National Railways

A "FLYING SCOTSMAN" OF CANADA

This is one of the many oil-electric locomotives in use on the Canadian railways. Self-contained equipment generates the required electrical energy. Canada is now one of the foremost countries in the efficiency of its gigantic railroads.



Swiss Federal Railways

THE MOST POWERFUL ENGINE IN THE WORLD

An 8,500 h.p. engine hauls the express over beautiful passes and through long tunnels on the St. Gotthard line, Switzerland.



S.C.R.

THE FIRST TRAIN ON THE TURKSIB LINE

The tremendous feat of building a railway from Lugovaya in Turkestan to Semipalatinsk in Siberia—a distance of 1,445 kilometres—was accomplished by the Soviet government in the incredibly short space of three years. This picture was taken from the first train to make the complete journey in 1930, and shows the type of country through which it passes.

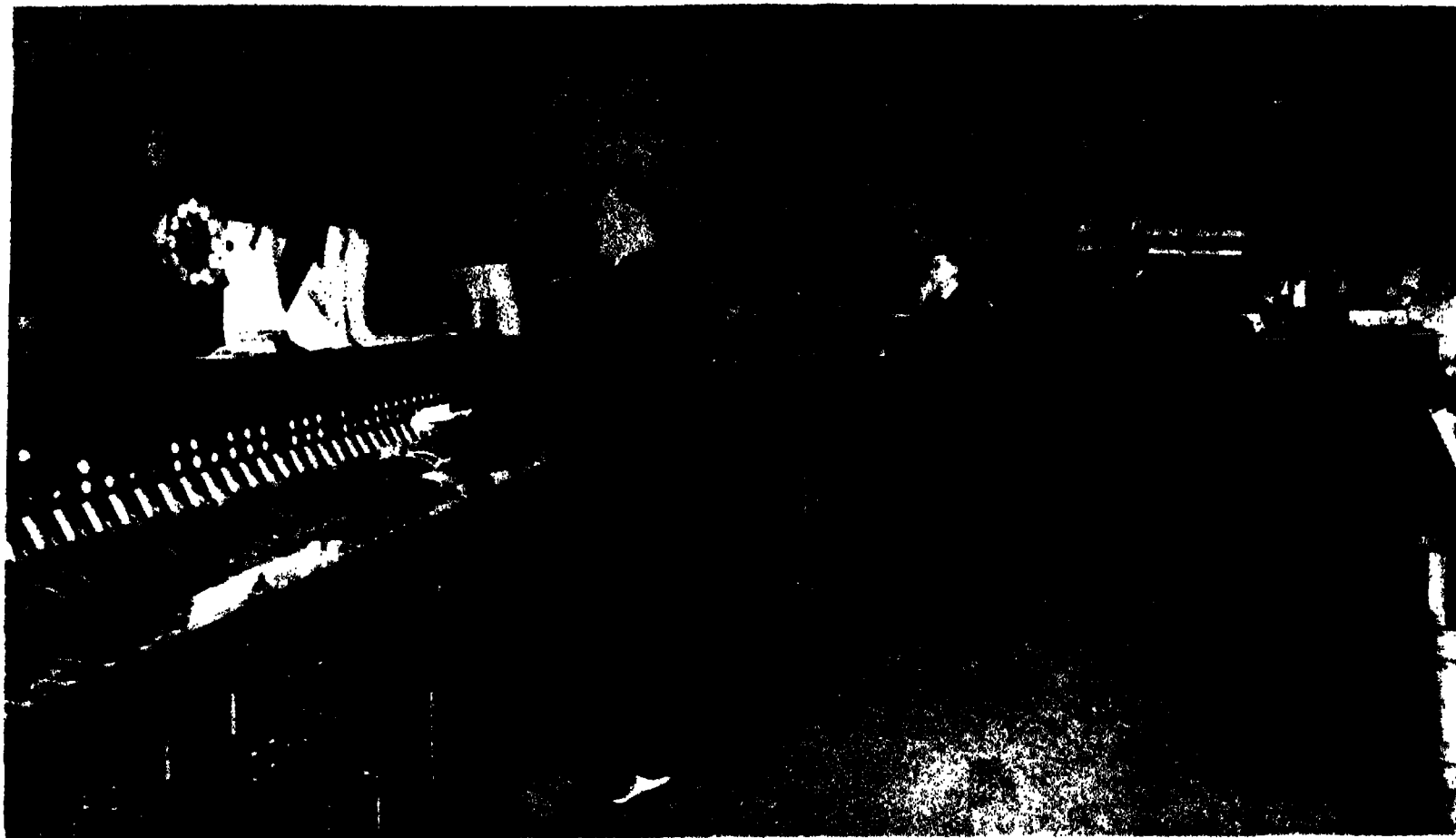


Swiss Federal Railways

MOUNTAIN CLIMBING BY TRAIN

Mountain climbing is a pastime which can only be indulged in by the comparatively young and physically fit. In many parts of Switzerland, electric railways have been constructed, either at important points for crossing mountain ranges, or to provide facilities for "mountaineering" in ease. Although they appear to be unsafe, accidents are extremely rare.

TRAVEL AND TRANSPORT



Southern Railway

INSIDE THE WORLD'S MOST WONDERFUL SIGNAL BOX

The signal-box of the Brighton electric system does the work previously done by nine boxes. Instead of the heavy old-fashioned levers, here the work is done by tiny levers. On the chart overhead the signalman can see every line and every signal over which he has control. He can also see by little lights the position of every train within his area.

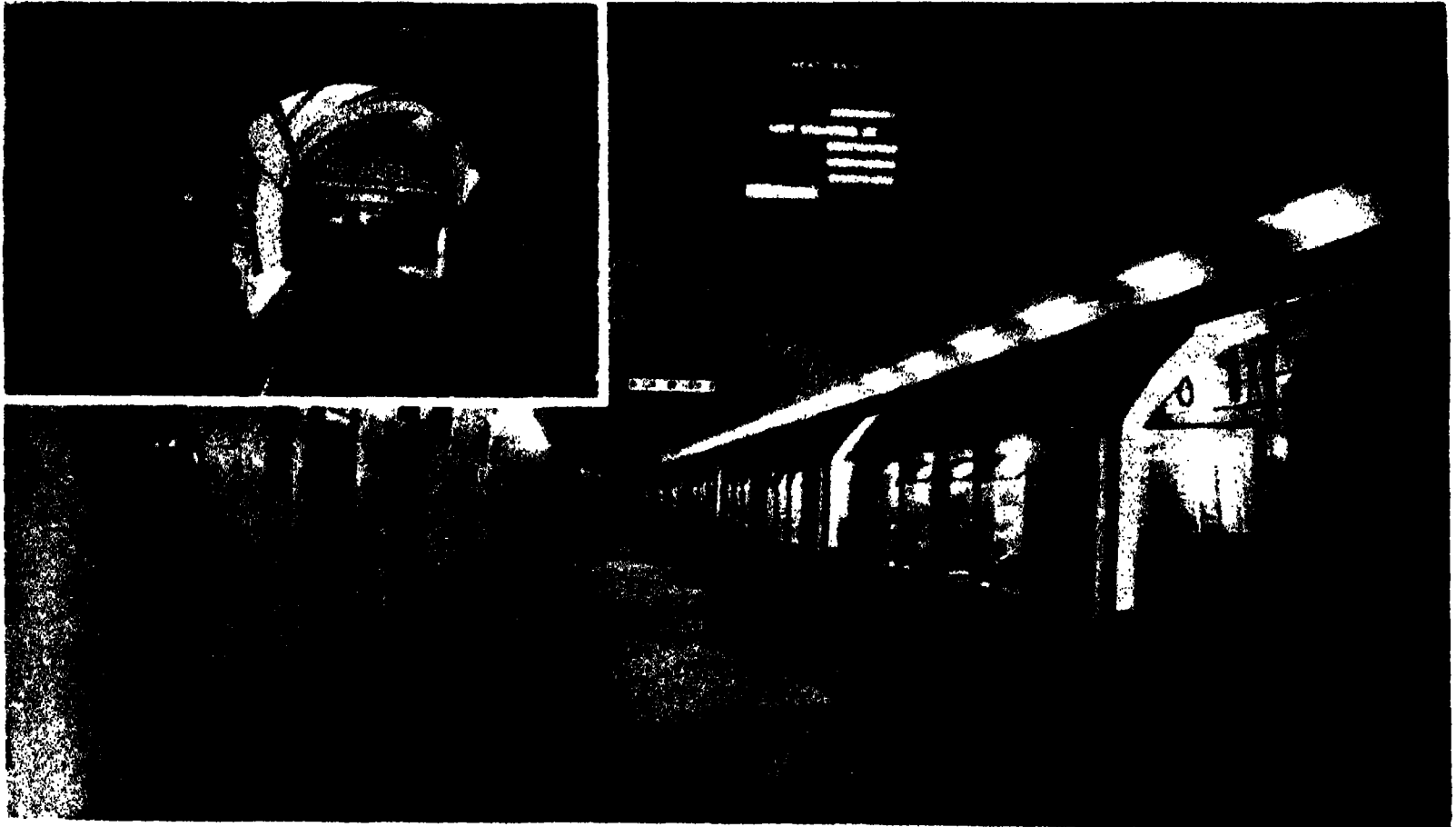


Daily Herald Photo.

A NEVER-ENDING STREAM OF LONDON BUSES

This survey would be incomplete without a picture of London's buses on which millions of people are transported to and from their work. In the heart of London, as in the scene above of the congested areas, traffic is becoming more and more complicated and many expedients have been adopted, such as gyratory systems, one-way streets, automatic traffic lights, etc.

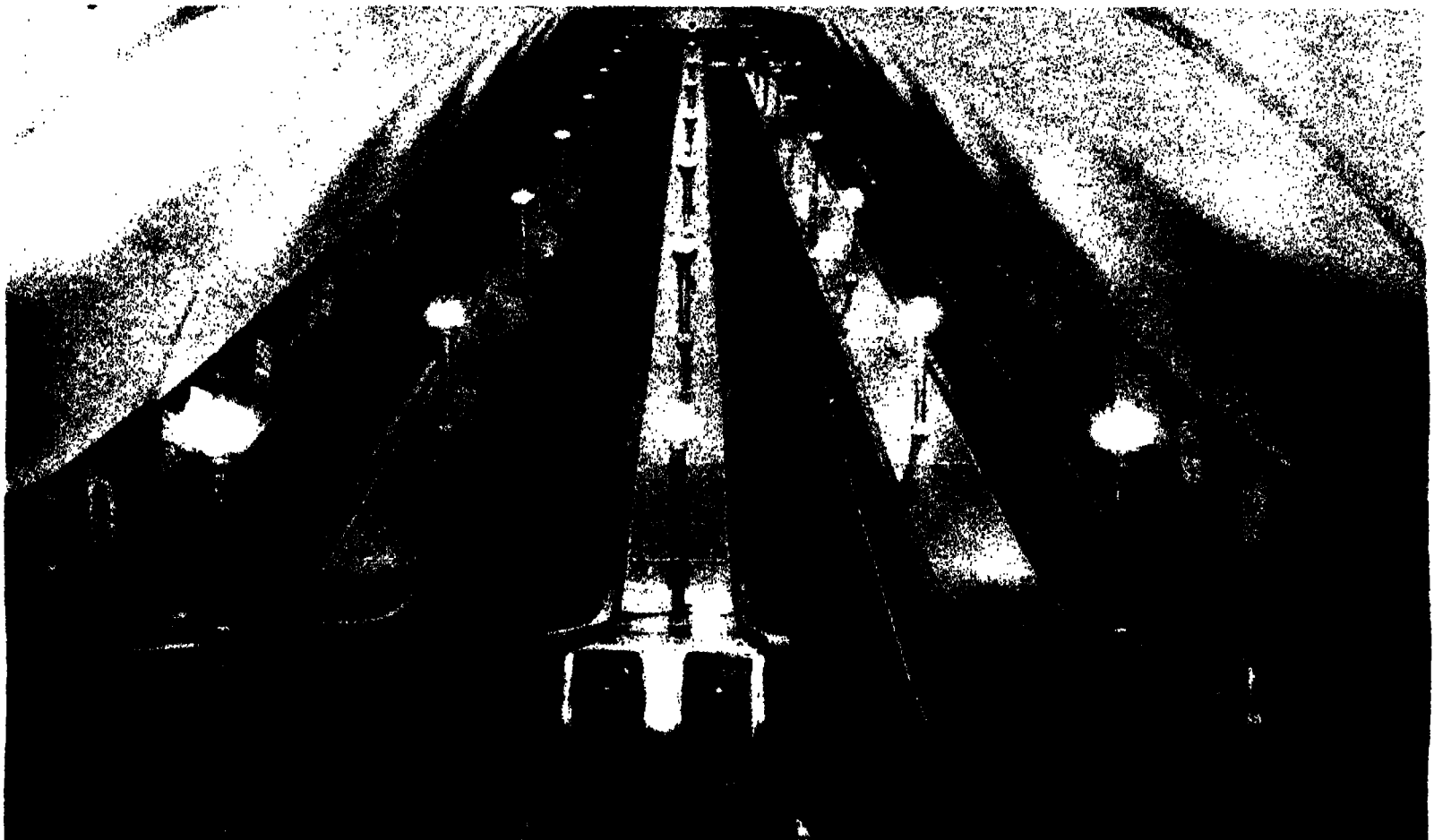
TRAVEL AND TRANSPORT



London Transport Board

THE METAL COACHES OF LONDON'S UNDERGROUND

Here we see a train in a station without its passengers. During the time of running there are too many passengers to allow the photographer to operate. Doors slide automatically and are controlled by the guard. *Inset* : An unusual view of an underground station as seen by the driver from his cab. Constant supervision is necessary to watch for cracks in the structure.

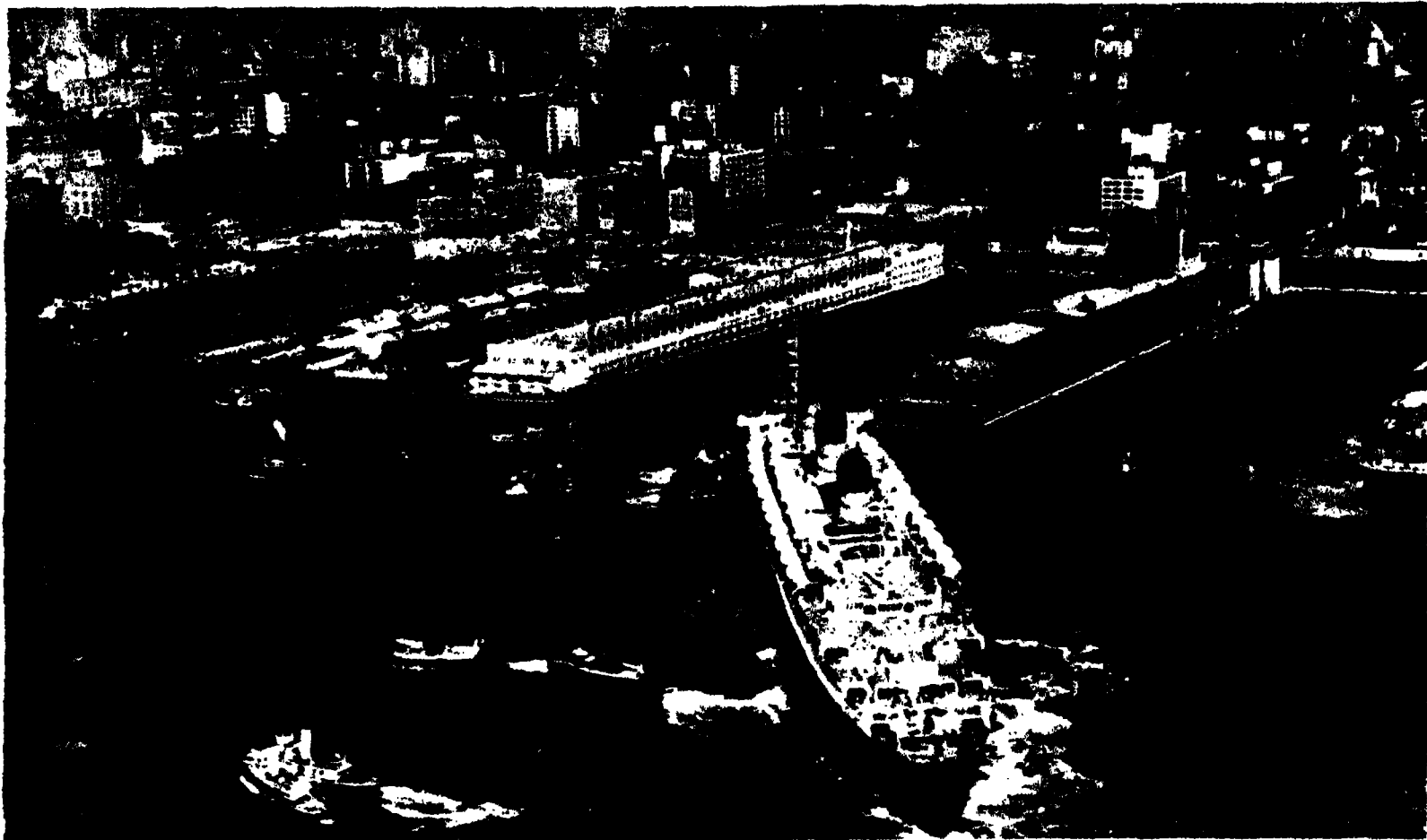


London Transport Board

MOVING STAIRWAYS OF LONDON'S UNDERGROUND

London's system of underground tube trains is the finest in the world. Here we see an example of the latest type of moving staircase in use at Holborn. These escalators, running on chains, take one down to, and bring one up from the platforms.

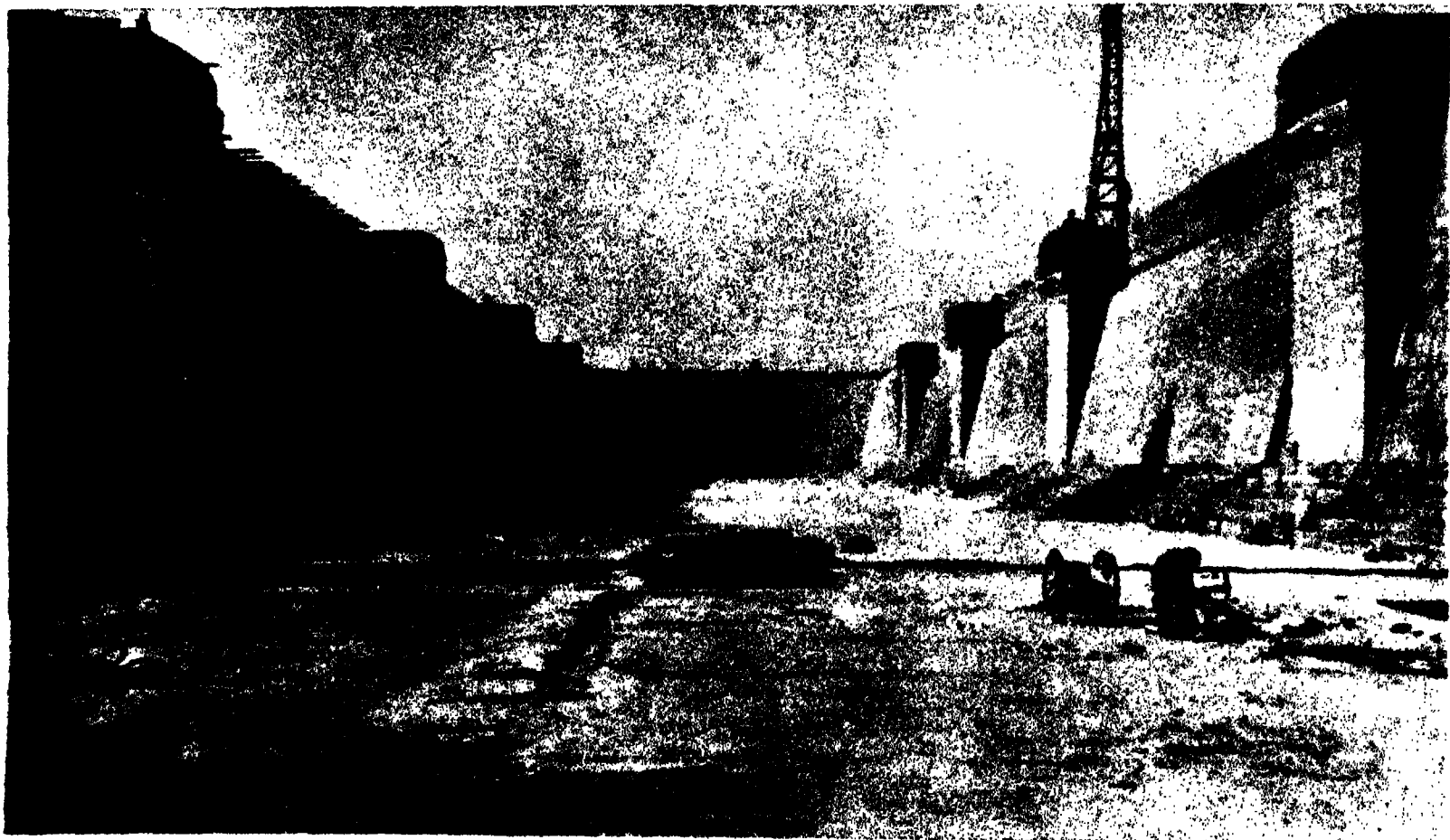
TRAVEL AND TRANSPORT



Paul Popper

A FLOATING PALACE

The luxury and splendour of modern ocean travel is expressed in this unusual view of the giant Cunard White Star liner the *Queen Mary* berthing in New York harbour. The *Queen Mary* is the finest vessel in all vast Britain's merchant fleet.



WHERE SHIPS ARE SPRING-CLEANED

When large ships need cleaning or repairing they go into a dry dock. This is a narrow basin closed by gates from which the water may be pumped or let out, leaving the vessel high and dry. The floor of the dock has a slight fall from back to front and from centre to sides to facilitate drainage. The world's largest dry dock is now that of Southampton.

TRAVEL AND TRANSPORT



Suez Canal Co.

A view of the Suez Canal, looking from Port Said towards Suez. It is bounded on one bank by the Sahara desert.

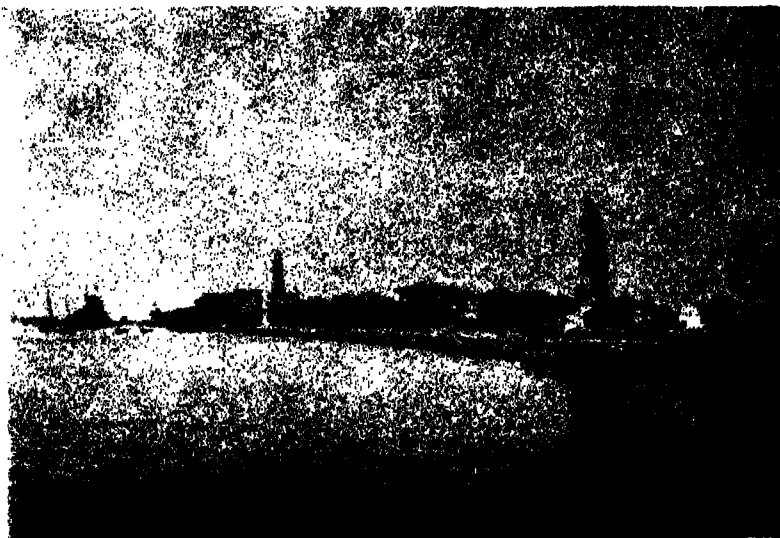


Suez Canal Co.

When vessels pass in the Canal one of them must tie up to let the other pass. The ship on the right is moored.

BRINGING THE FAR EAST NEARER

Ship canals have done much to render steamship routes more speedy. The Suez Canal connects the Mediterranean and Red Seas and so shortens the route to India. It was opened in 1869, and cost about 17 million pounds to construct. It is 99 miles in length, and was designed by the Frenchman, De Lesseps. The foresight of Benjamin Disraeli secured a controlling interest for Great Britain.

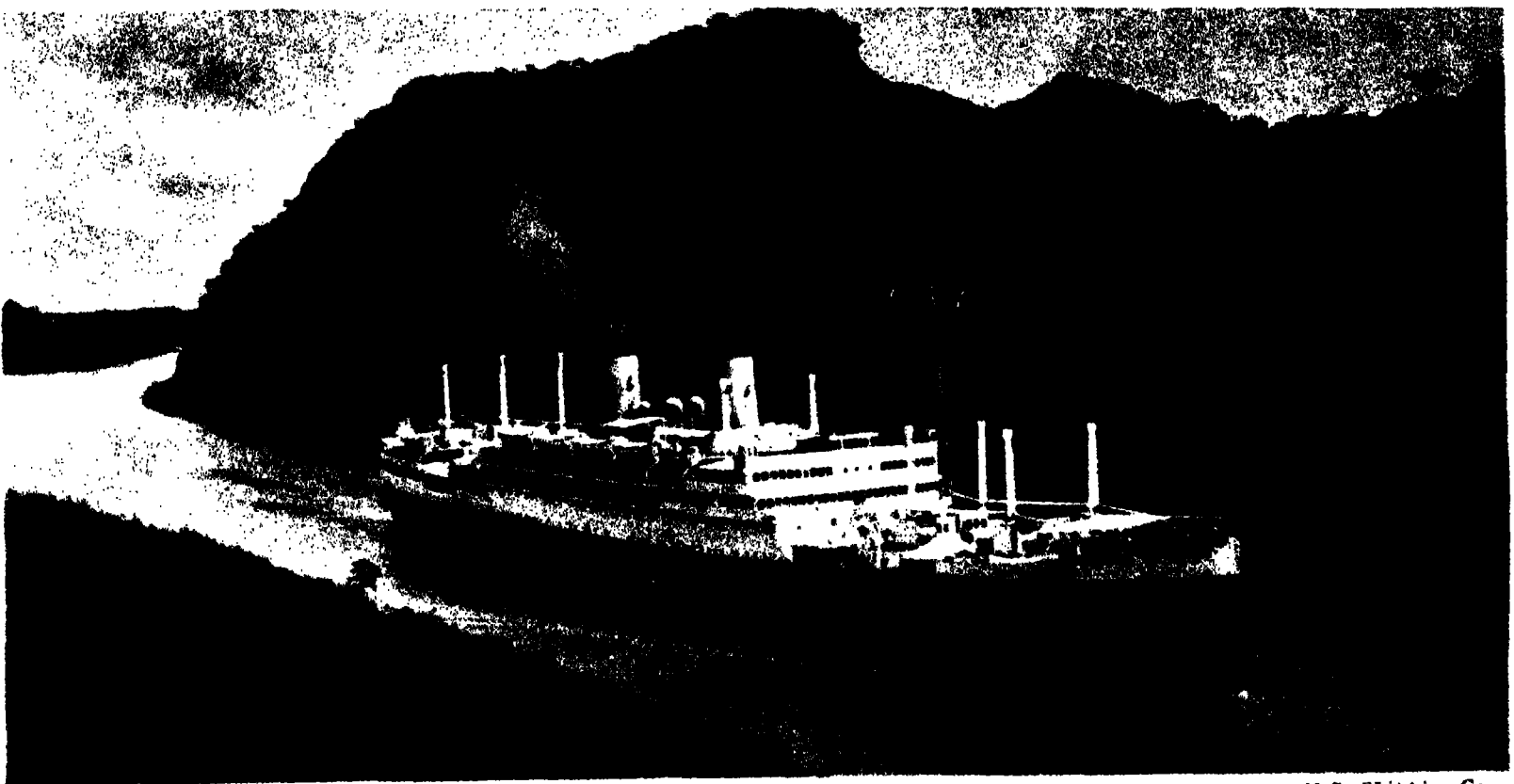


Suez Canal Co.

The entrance to the Suez Canal. On the right is the statue of De Lesseps, overlooking this wonderful engineering feat.

CUTTING AMERICA IN TWO

The Panama Canal is about 50 miles long and connects the Atlantic and Pacific Oceans. The journey through it takes about eight hours. One of the difficulties which faced those who built the Panama Canal was that the two oceans it joins are at different levels. To overcome this a series of locks were built by means of which a ship can be raised or lowered to the level of the ocean to which it is travelling.

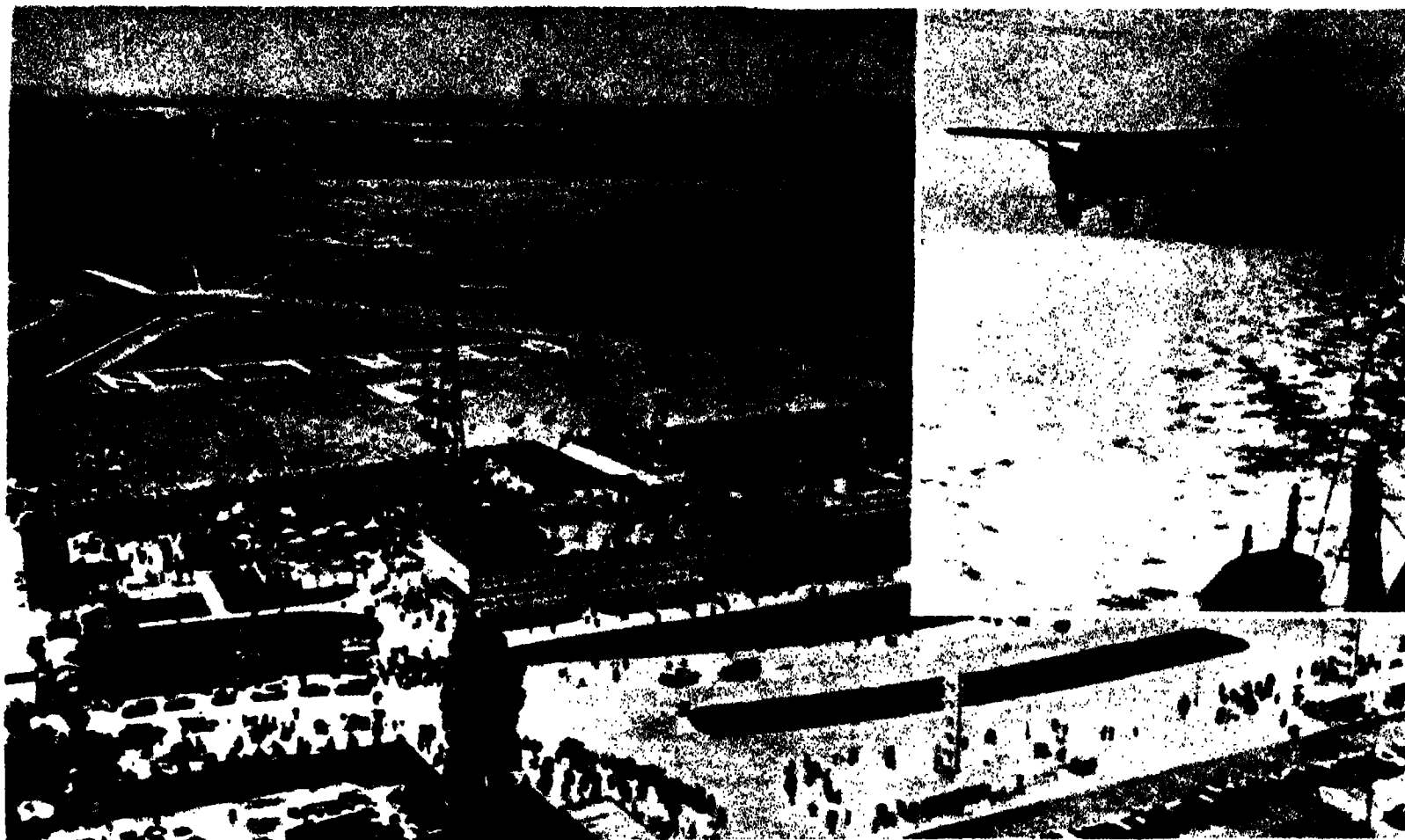


N.Z. Shipping Co.

A LINER IN THE PANAMA CANAL

Here is a liner steaming through the Gaillard Cut. Her speed is slow lest the wash of her passage damage the sides of the canal.

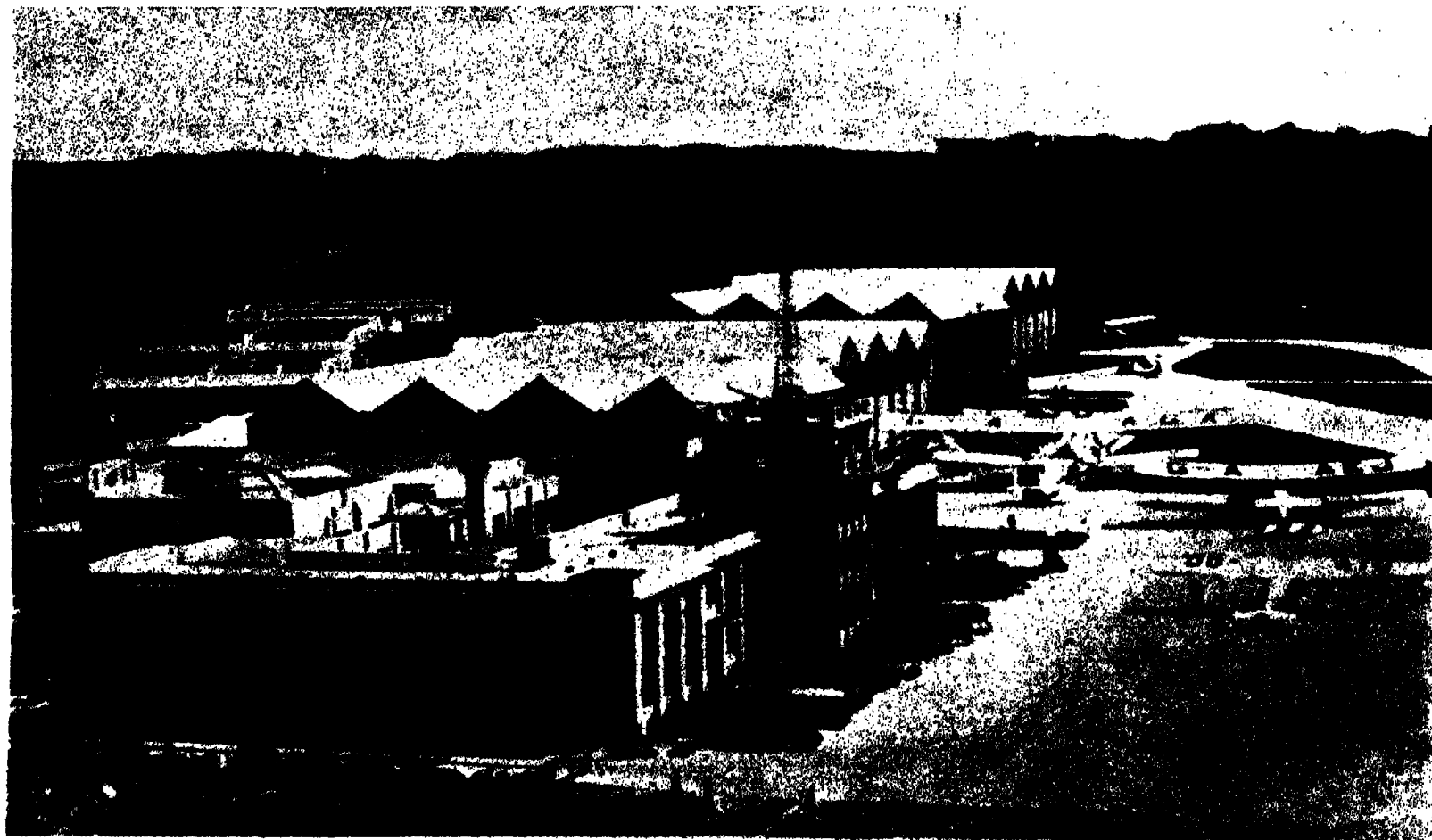
TRAVEL AND TRANSPORT



Imperial Airways

THE BIRTH OF THE AIR PORT

A natural consequence of the rise of aviation has been the establishment of air ports all over the world. Germany, for example, has been developing a civil air service rapidly and here we have a view of her chief air station, the Templehof aerodrome at Berlin. *Inset* : Picking up and dropping mails by aeroplane from a trans-Atlantic liner saves many hours.



KEEPING IN TOUCH WITH FLEETS OF AIR LINERS

This is an aerial view of the Croydon aerodrome, the chief air port of Great Britain. The raised portion is the control tower. From here the air liners are continually kept in touch by means of the radio telephone, very necessary in fog.

HIGHWAYS OF THE WORLD

WITHOUT roads travel and transport would have been impossible, and in spite of the network of railways that covers most civilised countries, and the establishment of air routes, the growth of motor transport has made roads of greater importance to-day than they have ever been. The first great road-makers

were the Romans with their genius for organising and developing the lands they conquered. Straight over hill and dale they built their roads, and so well that their remains still exist; indeed, many of our modern roads follow the exact routes of the old Roman roads. We pause for a brief spell to glance at some of the famous streets of the world.

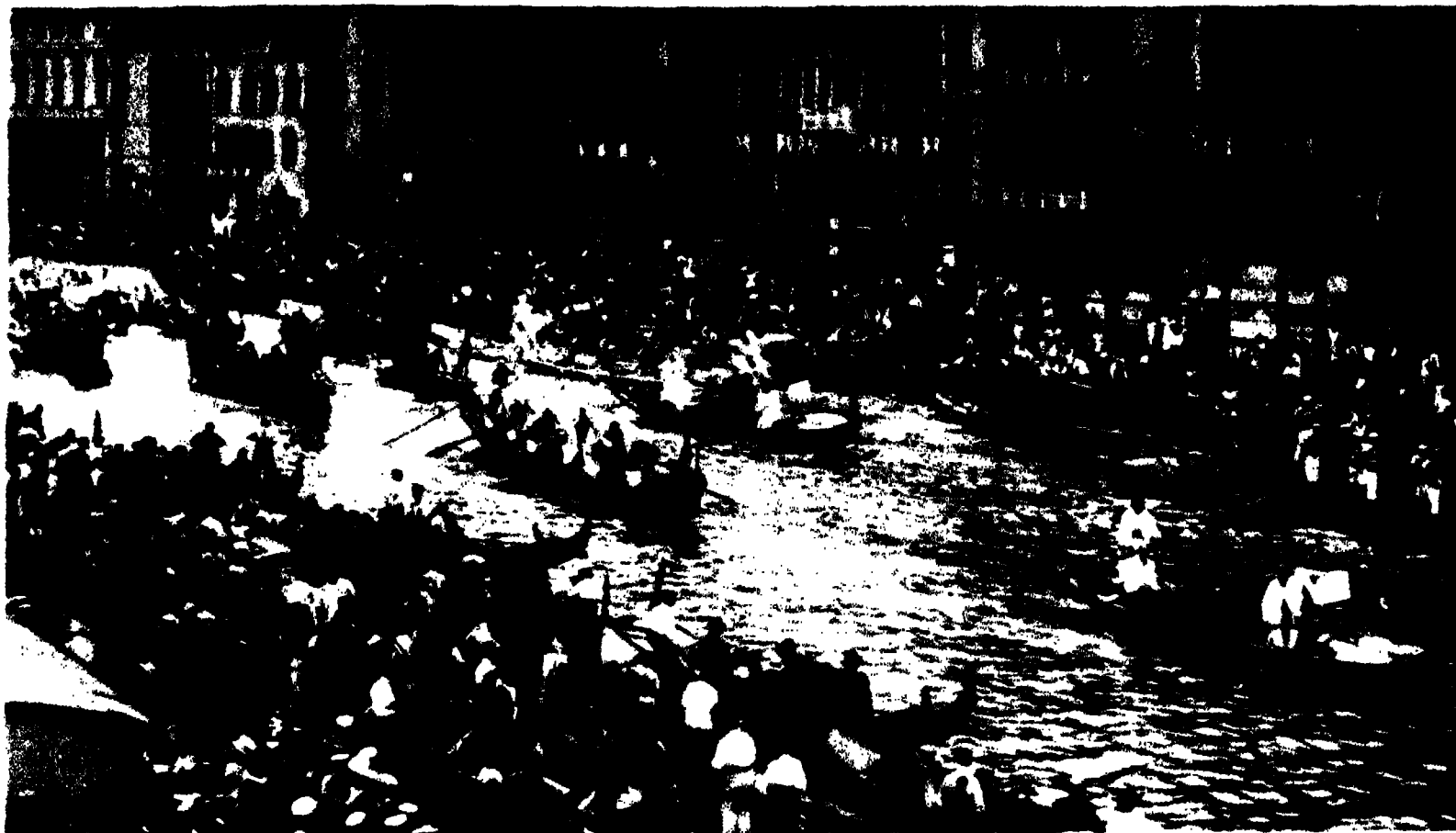


E.N.A.

THROUGH AN ARCH OF THE COLOSSEUM

From the famous amphitheatre of the ancient Romans we look below on the Via Dell'Impero, a thoroughfare of modern Rome.

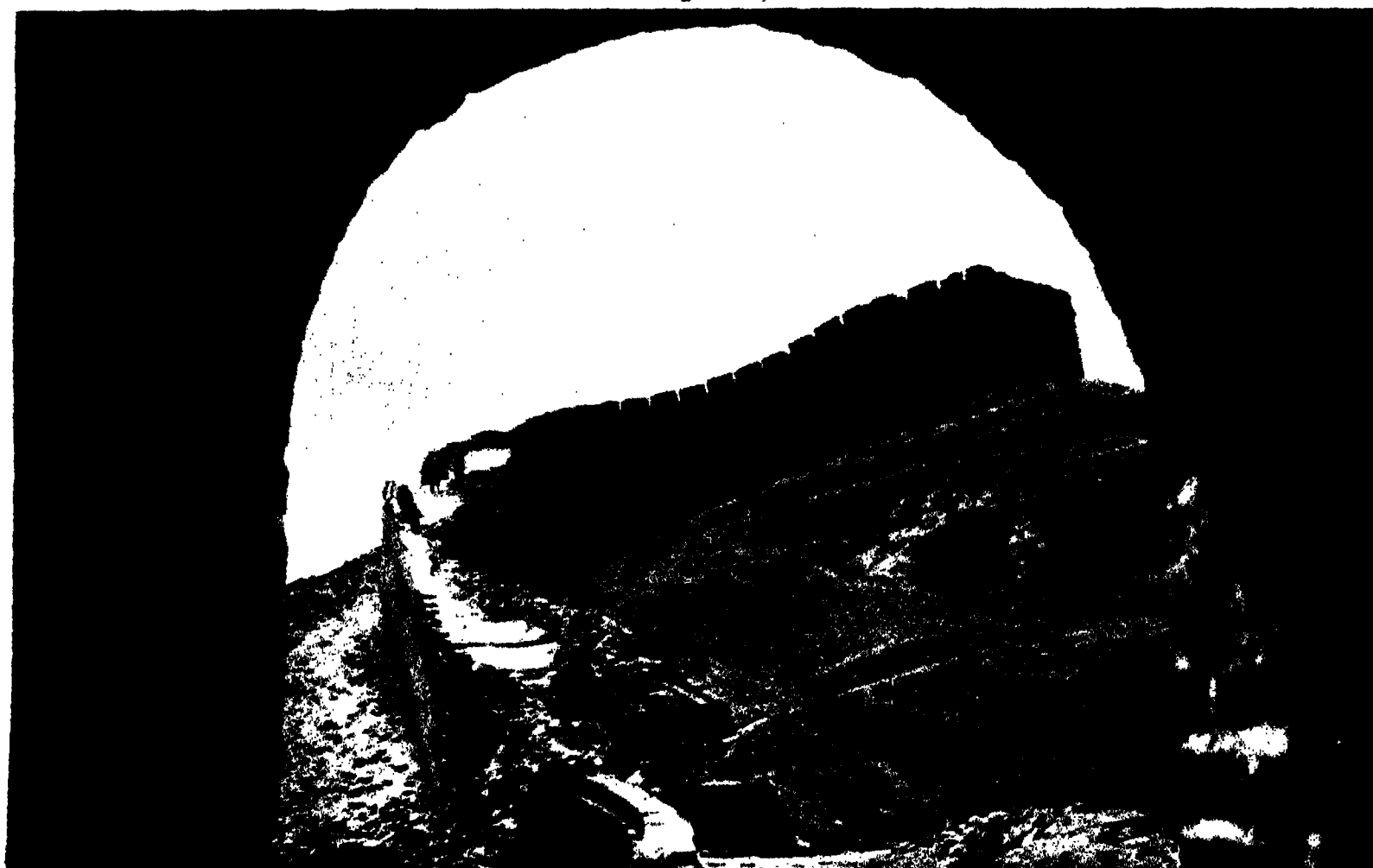
HIGHWAYS OF THE WORLD



Wide World

THE HIGH STREET OF VENICE—THE GRAND CANAL

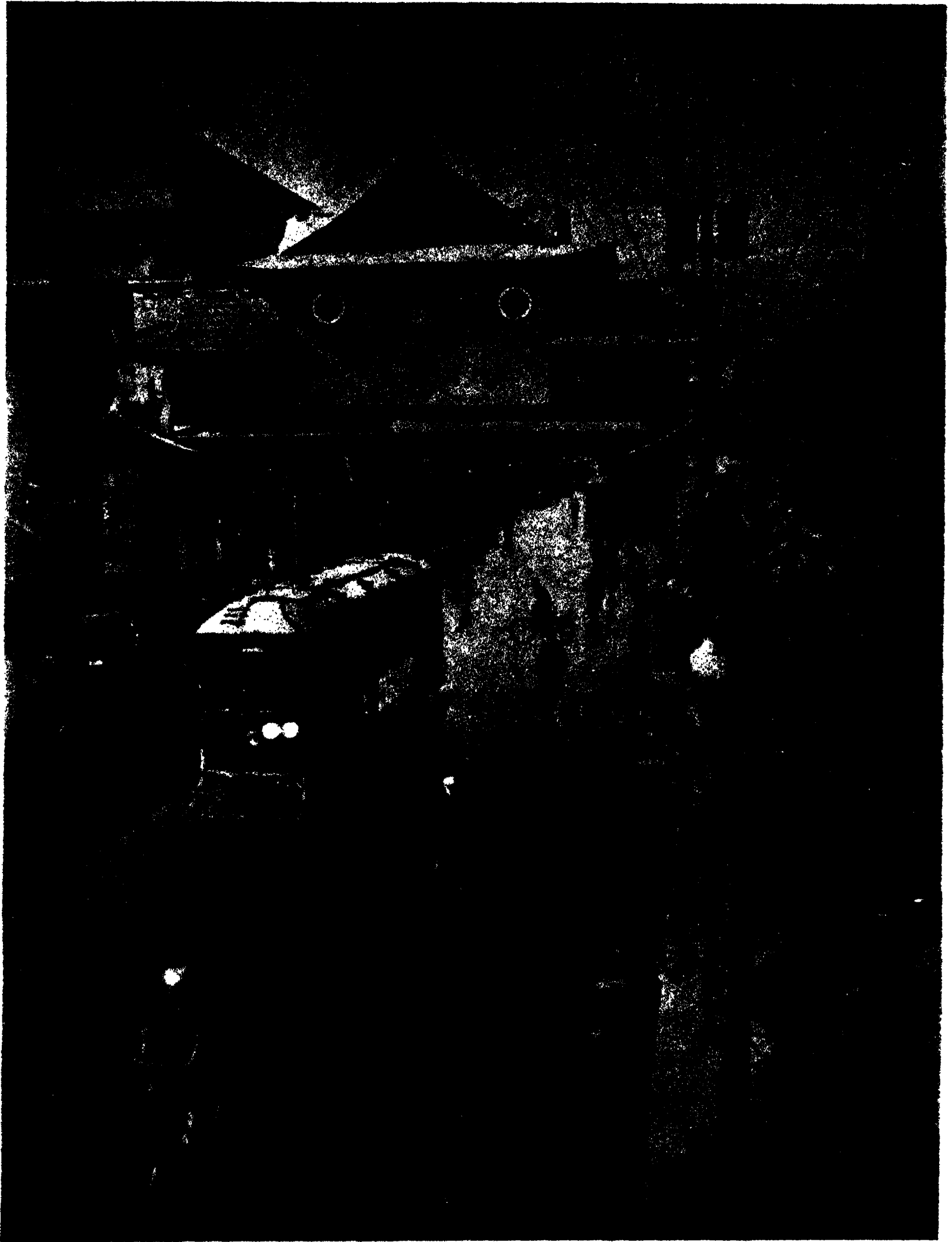
The principal thoroughfare of Venice is the Grand Canal with its picturesque river traffic. On either bank rise mansions of medieval splendour such as the Palace of the Doges. The picture above was taken on one of Venice's famous gala days.



G.P.A.

THE GREAT WALL OF CHINA

Although this Wall (2,500 miles long—in length somewhat greater than the Grand Trunk Road from Calcutta to Peshawar) was originally built as a military defence, it was naturally used for centuries as a means of cross-country communication.

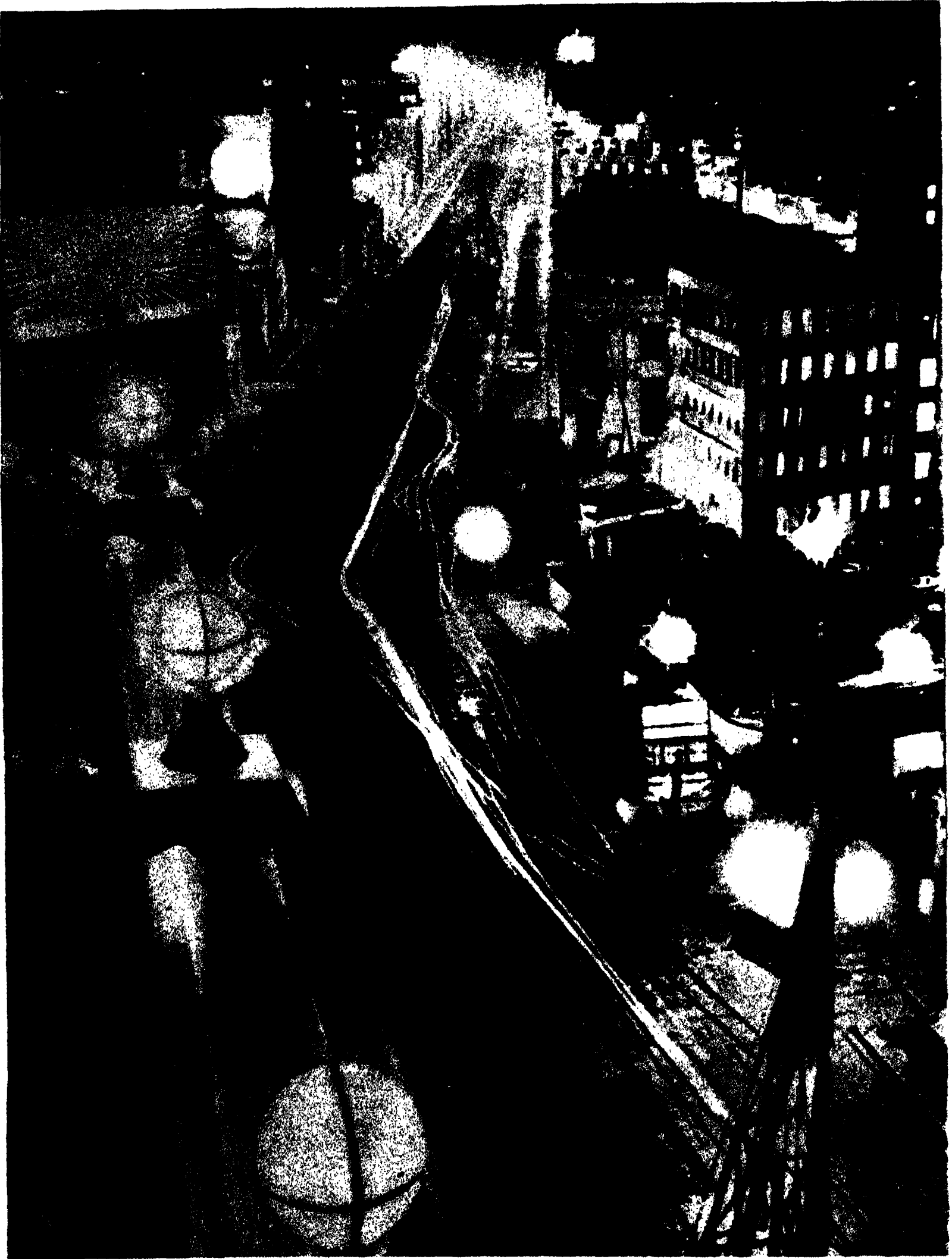


Associated Press

WHERE EAST MEETS WEST

Although Japan is fast becoming Westernised, her ancient and Oriental beauty still remains, making a curious contrast.

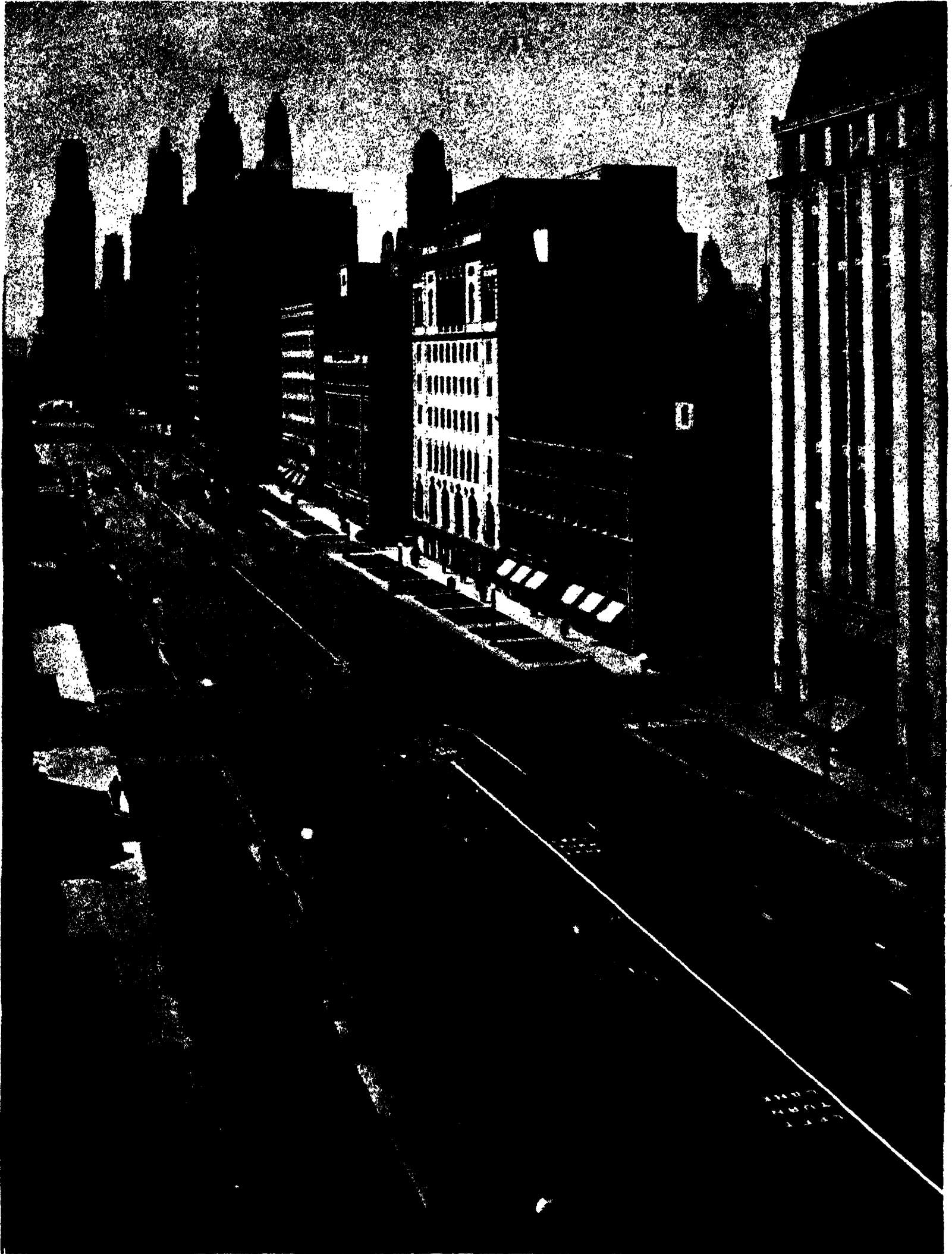
HIGHWAYS OF THE WORLD



THE OXFORD STREET OF THE EAST

E.N.A.

Brilliant illumination has invaded the East. Here is the Ginza in Tokio ablaze with illuminated signs and street arc lamps.

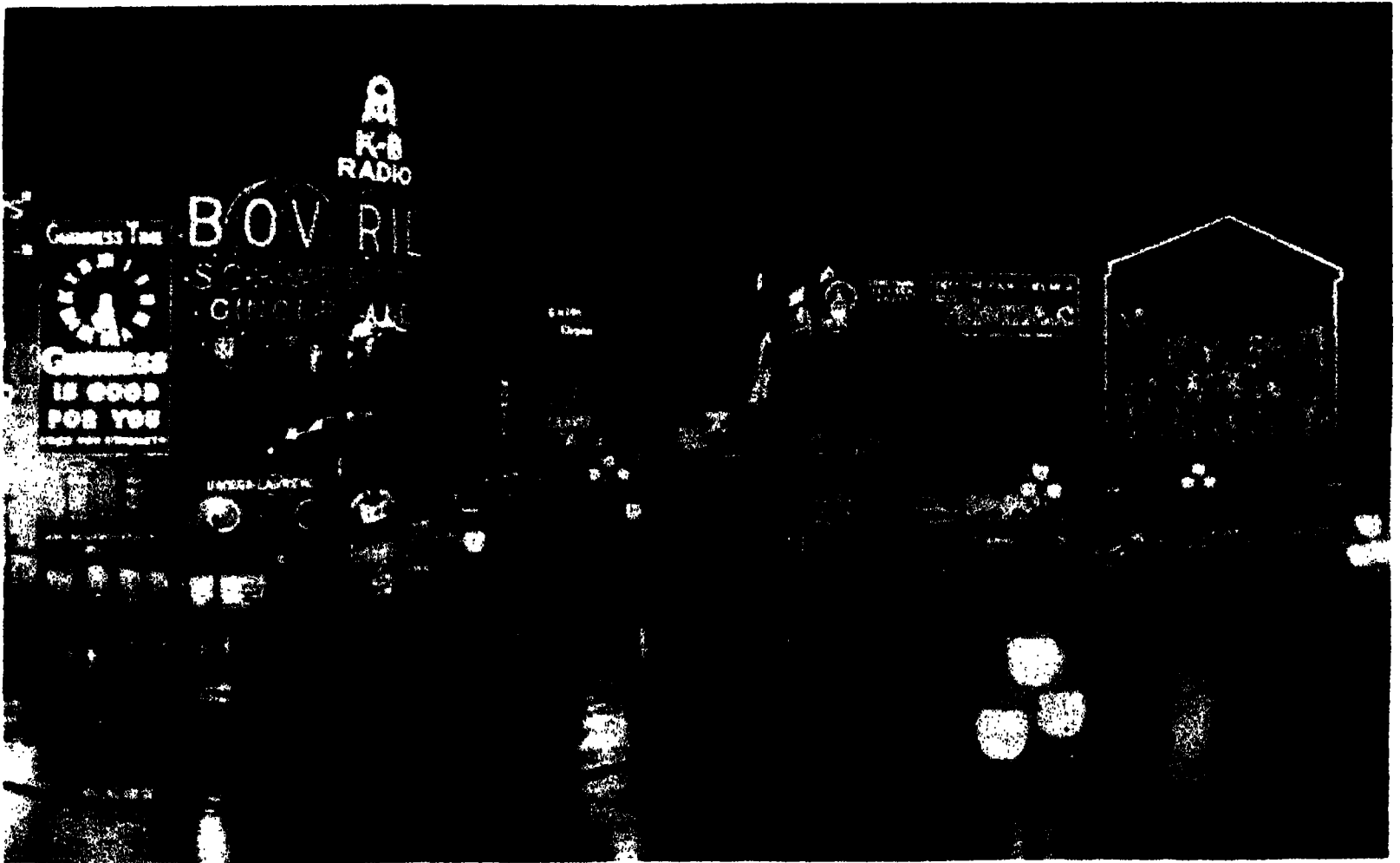


E.N.A.

A FAMOUS BOULEVARD OF THE NEW WORLD

The Michigan Boulevard in Chicago has been built on modern lines. Not a single horse-drawn vehicle can be seen here.

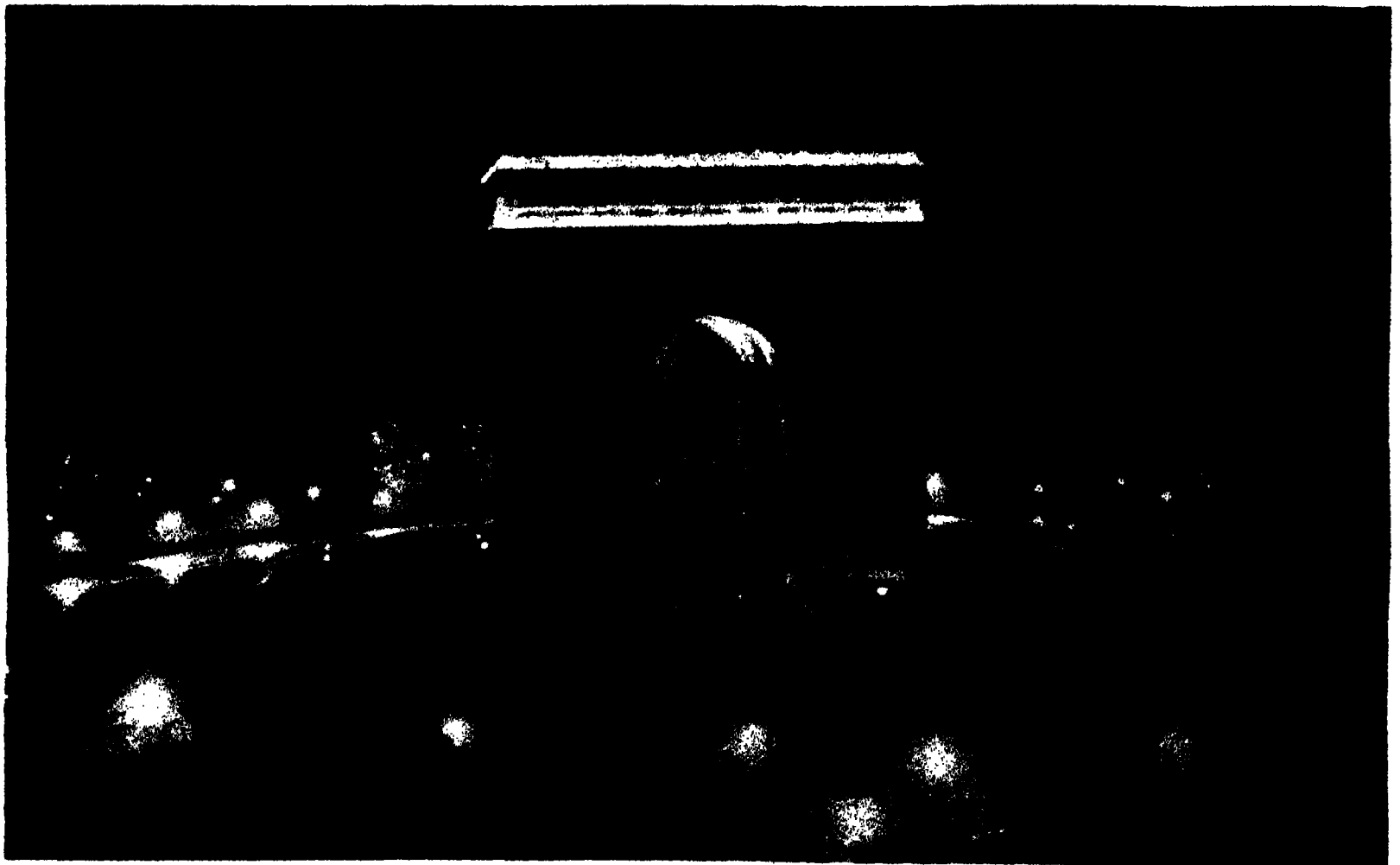
HIGHWAYS OF THE WORLD



Wide World

THE LIGHTS OF PICCADILLY

Every Englishman sooner or later makes his way to Piccadilly Circus, probably the most famous meeting place in the world



Courtesy, Pacific and Atlantic Photos

THE NIGHTLY SPLENDOR OF PARIS

From the Arc de Triomphe and the wide encircling Place de L'Étoile branch out twelve broad avenues of Paris.

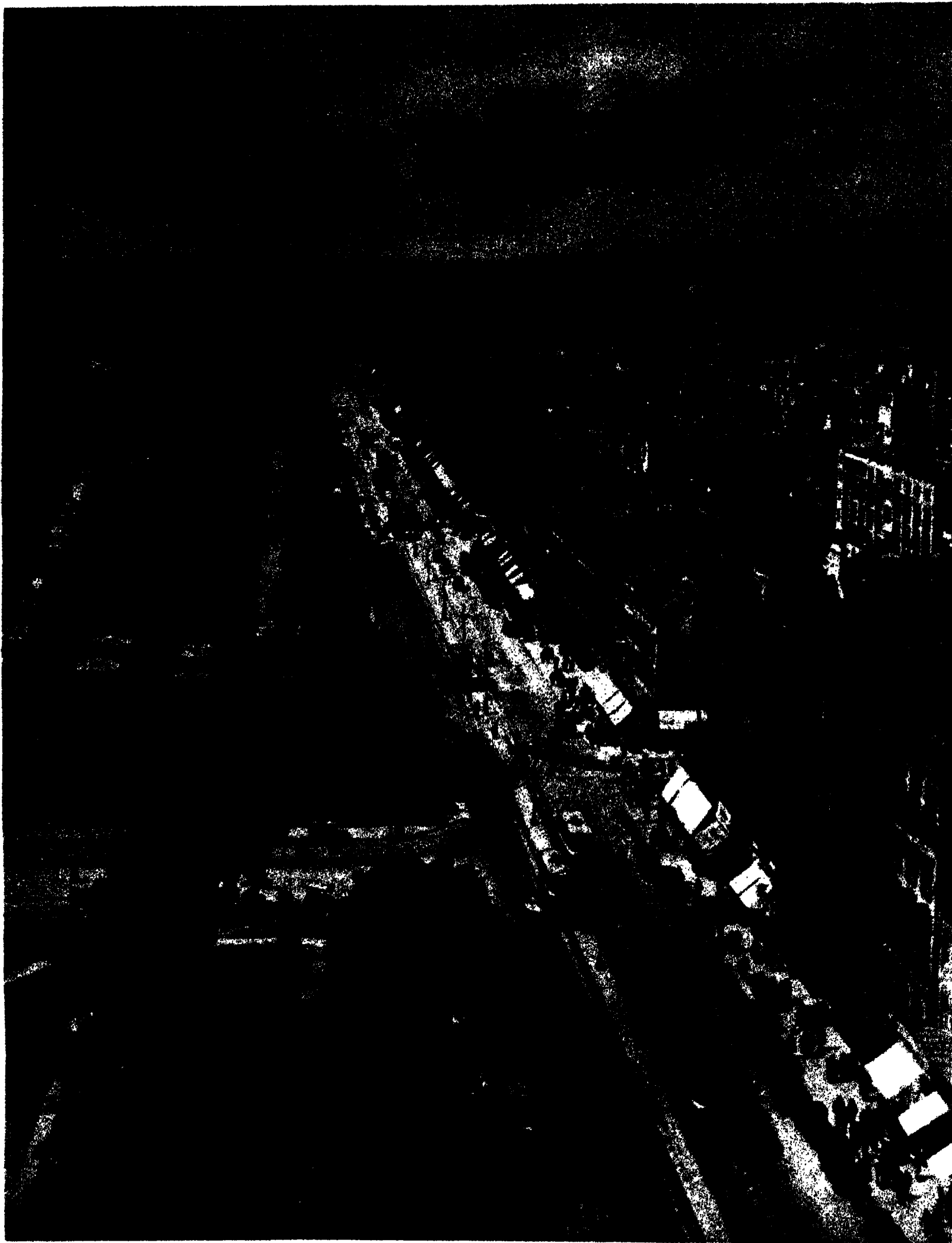


A FAMOUS LENINGRAD STREET

E.N.A.

This picture of a Soviet military parade well illustrates the width of the Prospekt of the 25th October. Before the Russian Revolution this street was famous throughout the world as the Nevsky Prospekt, Russia's most fashionable shopping centre.

HIGHWAYS OF THE WORLD

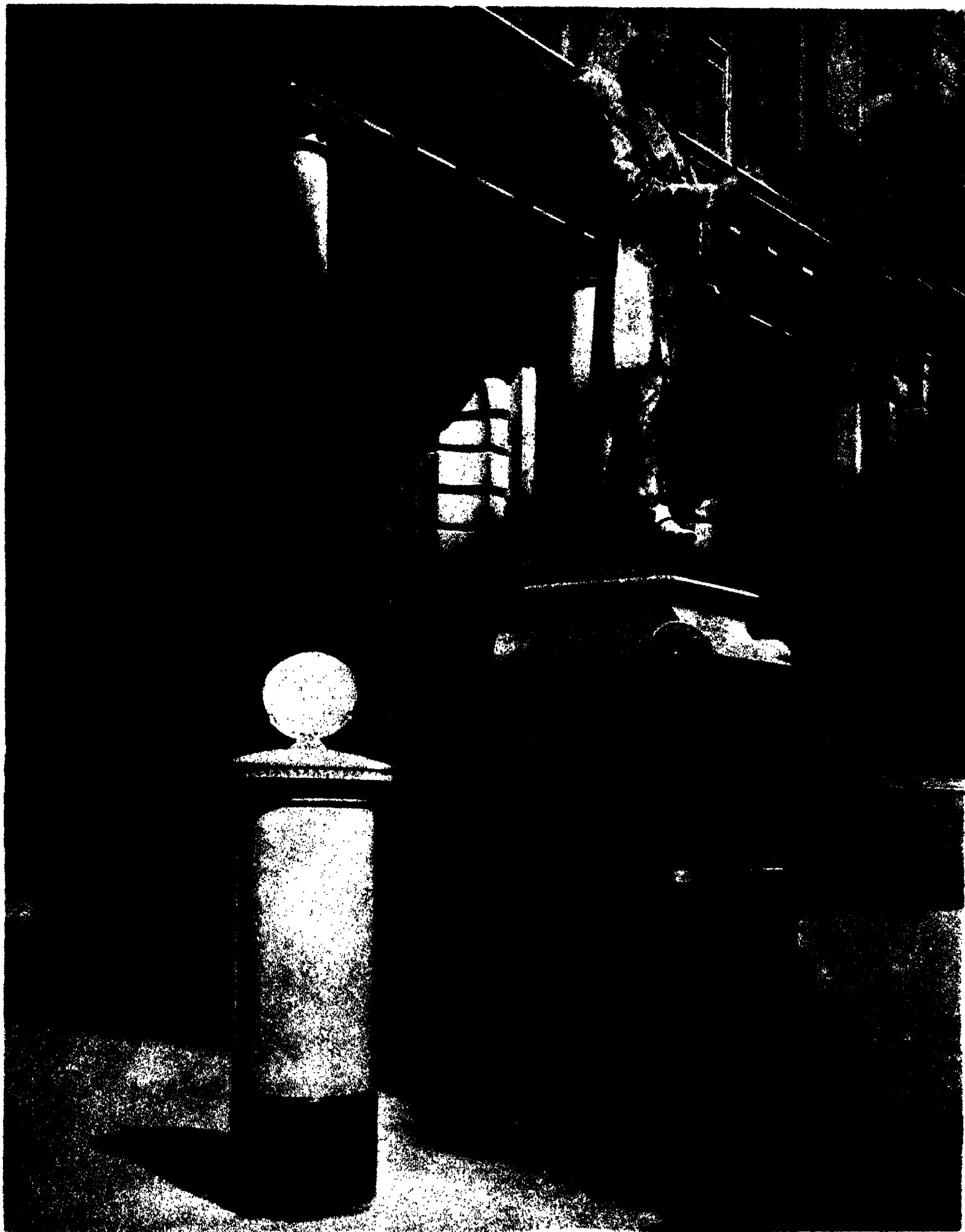


THE WORLD'S MOST BEAUTIFUL STREET

Wide World

A view of Princes Street, Edinburgh, from the Scott Monument. On the right stretches a row of fashionable shops. On the left the gardens, in the summer ablaze with colour, dip to the foot of the romantic and historic Castle Rock.

HOW MAN TALKS TO MAN



Post Office Photo

FROM PENNY POST TO AIR MAIL

The first important step in the development of modern communications was the introduction of the penny postage by Rowland Hill about 1840. A statue to his memory stands outside the General Post Office, London, and close beside it—a symbol of the most modern way of carrying letters—a special blue “air mail” pillar box, links past with present.

HOW MAN TALKS TO MAN

LETTERS are still the simplest and most commonly used means of sending messages on every continent, though a few more primitive methods, the beating of drums, the lighting of fires, or the message sent by word of mouth, are used by some of the less civilised peoples. These, however, are comparatively unimportant.

There are two main factors which have helped to build up the present day world-wide systems of rapid communication. They are the momentous invention of electricity by Michael Faraday just over a century ago, and the establishment of the International Postal Union in 1874.

A Postal League of Nations

Without electricity there would be no telegrams, no telephones, no wireless, and it is upon these three inventions that "rapid" international communication depends.

Roland Hill might be called the father of modern postal services in Great Britain, for it was he who introduced the penny postage into England in 1840 and thus brought the postal services within the reach of everyone. Since then the carrying of letters has developed to such an extent that it is now a highly complex undertaking in the biggest and most important civilised countries, and even in the lesser it is still considered of sufficient importance to be a matter for international agreement.

The International Postal Union was formed at Berne in Switzerland in 1874. When the Union was established only a comparatively small number of the most important countries in the world joined it. But the advantages were so obvious that before very long practically every country in the world had asked to be admitted as a member. Now only a few very unimportant states in Asia and Africa remain outside. For a short time after the revolution, Russia withdrew from the Union, but a few years later she resumed her membership.

The Union has agreed that every country shall place at the disposal of every other country, all facilities used for dealing with its own internal mails. The charges for, and the weight of, letters are fixed. A nation may charge what it likes for letters inside its own territory, but between

countries letters are charged for at rates agreed upon by the Postal Union.

Any improvements introduced by one country are pooled for the benefit of all. It is, in fact, a League of Nations for the maintenance of efficient communication all over the world.

The "postman" is a familiar figure in our national life and in that of other countries, but few of us realise much of what happens to a letter between the time when we drop it into the pillar box at the corner, and the time when it reaches the person to whom it is addressed. How many sortings will it go through? Will it travel by road, rail or steamer? Will the stamp on the envelope be franked by hand or by machine? Will it go direct to its destination, or will it go to some big district office where it will be re-sorted and sent again on its journey?

In the large district-offices every available mechanical device is used to lighten the work of the men. One letter may be light enough, but a mail bag full of them is quite another matter. And considering the thousands upon thousands of letters which pass through post offices, the number of men that handle them, and the stupidity of people who address them, the number of letters that go astray is surprisingly few.

Aeroplanes are, of course, revolutionising the delivery of mails.

All down the centuries man has been handicapped in his efforts to travel, by the great natural barriers of the earth—immense mountain ranges, great deserts, impenetrable forests, mighty rivers, limitless oceans, frozen wastes.

The Network of Air Mail Routes

For hundreds of years he has been more or less master of the sea, but the deserts, the tropical forests, and the highest mountains have remained unconquered. The coming of aeroplanes opened up for him a new highway, one that knew no gigantic peaks, no jungles, no deserts, no hidden rocks. By means of the aeroplane he can pass above every obstacle. His only requirement is an open space just large enough to rise up from and to land on at the end of his varied journeys.

In the very earliest days of commercial flying, mails were carried by the Services. Now, only

HOW MAN TALKS TO MAN

nineteen years after the war, the world is a network of air mail routes. In Europe there are regular services to :—

Austria	Italy
Belgium	Latvia
Bulgaria	Lithuania
Czechoslovakia	Malta
Danzig	Norway
Denmark	Poland
Estonia	Roumania
Finland	Russia
France	Spain
Germany	Sweden
Greece	Switzerland
Holland	Turkey
Hungary	Yugoslavia

Tests are being carried out for a trans-Atlantic airmail service to the United States and Canada and a regular service will be soon in operation. The United States is a network of lines. In South America the air routes form a continuous chain round the coast, only cutting across the Continent from Santiago in Chile, to Buenos Aires, in the Argentine. Even Magellanes, the little town right at the south of Patagonia is not forgotten. An air mail goes there from Buenos Aires.

Within the British Empire the carrying of air mails is also developing rapidly. There is now a regular service to South Africa running the entire length of the Continent from Cairo to Cape Town, and serving Kenya, Tanganyika, Nyasaland, Portuguese East Africa, Rhodesia and British South Africa. On the west coast an air mail serves the towns as far south as Dakar, and from there across the South Atlantic to Brazil where it connects with the South American Air Services, which carry the mails to their destinations on that continent. Imperial Airways carry mails regularly to India and the Far East—through Burma, the Malay States, and down to Singapore. From here one branch goes to Hong Kong while the main service carried on to Port Darwin in Australia. In Australia itself aeroplanes carry mails over the greater part of the continent. Within a short time all first class mail will be carried by air on the Imperial routes at a uniform charge of 1½d. a half ounce.

So far as "rapid" methods of communication are concerned, broadcasting is easily the most

important and is likely to prove even more so.

Marconi, the great man of wireless, even as a boy displayed a keen interest in physical and electrical science, and he was only 24 when he succeeded in transmitting his first wireless "telegram" from the Isle of Wight to Bournemouth in 1898. Three years later, in 1901, he had transmitted a message across the Atlantic.

The Radio Telephone has Annihilated Distance

It was really due to Marconi's research work during the war, undertaken to help the Allies with war-time communications, that we now have the radio-telephone which enables us to speak with almost any country in the world. The great distances over which we can hold a conversation are made possible by the use of what is known as the "short wavelength."

These short waves—electrical currents set up in the ether by the transmitter—travel round the whole world in one-seventh of a second.

The same satisfactory results could not be obtained with the "long-wave" transmission, which is still in use between England and America, but even here the service is supplemented by two short-wave transmitters.

At present the highly skilled nature of the work involved in maintaining the radio-telephone service make it necessary to charge special fees. A call costs £1 to £1 10s. a minute to most parts of the British Empire. But as the service becomes more widely used, the charges will undoubtedly be reduced.

The radio-telephone has, indeed, performed the incredible miracle of annihilating distance.

But what of the future? Has man reached the limit of his capacity for inter-communication, or are there fresh fields to conquer? Dreamers of dreams receive little but ridicule when they mention the possibility of communicating to other worlds. But, if there is life on any of the planets, the miracle of wireless has merely taught us that such a possibility is not beyond the realms of ultimate realisation. In fact, the history of human invention has always been the successful performance of "miracles."

DAPHNE CLARE.

HOW MAN TALKS TO MAN



E.N.A.

SUMMONING A TRIBE

The headman of a village in Uganda beats an enormous tom tom to call the people together to hear news or to receive proclamations from their tribal chief.



E.N.A.

" BUSH TELEGRAPH " ON THE CONGO

On this great drum news is pounded forth from tribe to tribe, and it is by this means that natives learn tidings of which, despite modern inventions, district authorities are often in ignorance.

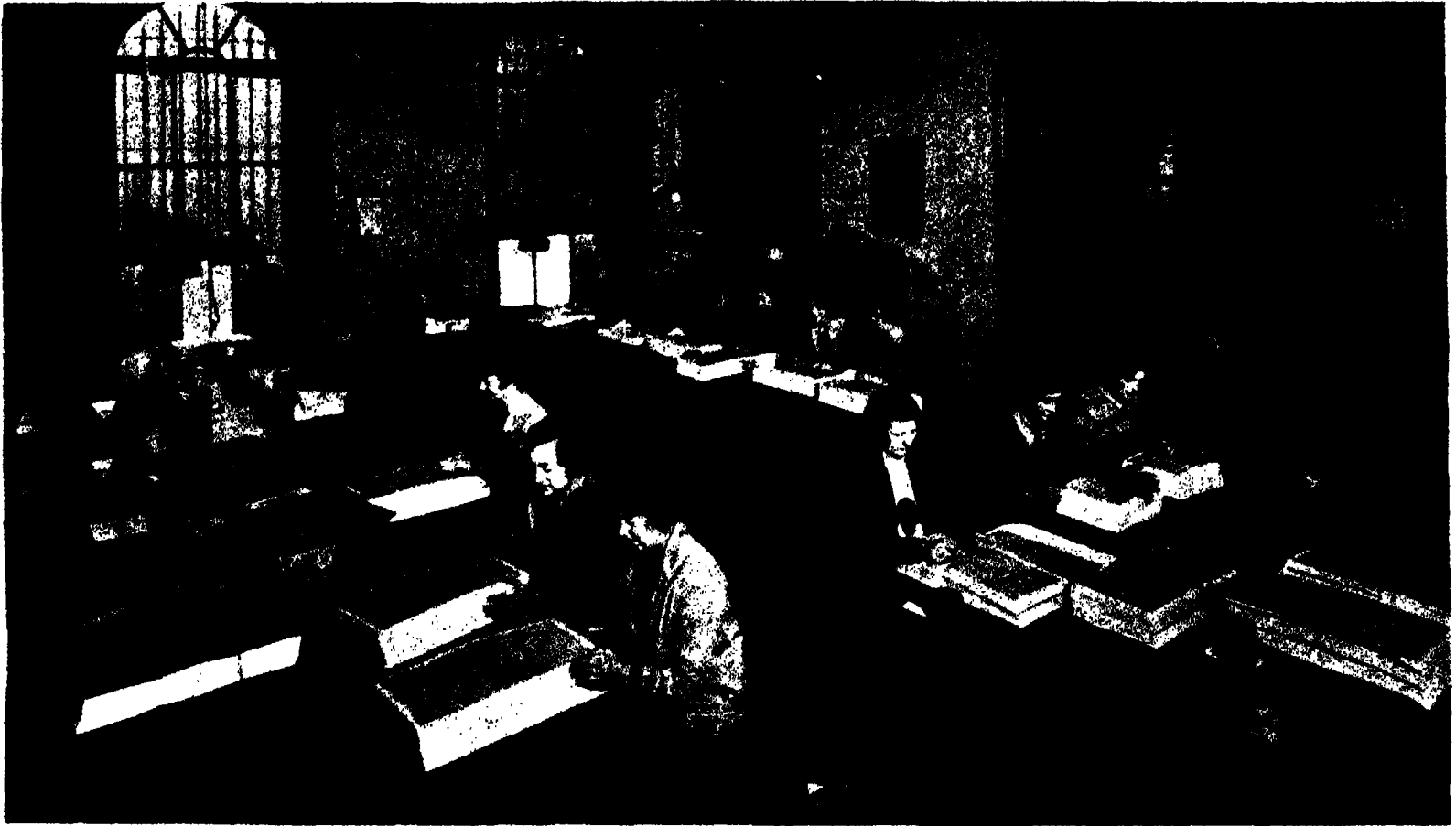


E.N.A.

THE ROARING DRUMS OF WAR IN EQUATORIAL AFRICA

In the absence of printing presses, proclamations can only be made by word of mouth in Equatorial Africa. Here we see the drums of the Sultan of Niellim being beaten to bring the scattered tribesmen together to hear a proclamation of war.

HOW MAN TALKS TO MAN



Post Office Photo

THOUSANDS OF POUNDS' WORTH OF STAMPS

At Somerset House, Strand, London, a special staff of post office officials deal with postage stamps. In the stores department are kept thousands of pounds' worth of stamps which will eventually find their way to the envelopes of our letters.



Post Office Photo

FRANKING 1,000 STAMPS PER MINUTE

Those letters which will not fit into the machines or have the stamp put in some awkward place on the envelope have to be stamped by hand as shown in the picture on the right. A great deal of time is wasted through carelessness. The picture on the left shows a stamping machine at work. These machines stamp at the rate of 1,000 per minute.

HOW MAN TALKS TO MAN



Post Office Photo

WHEN YOU POST A LETTER!

When you drop your letter into a posting box what happens to it? At the G.P.O., London, letters slide down a special chute straight into a mailbag held in position at the bottom.



Post Office Photo

SORTING THE AIR MAIL

The air mail is dealt with in a section of its own. The letters are sorted into pigeon holes, the packets into bags. The sorters must possess a knowledge of the world's geography.



Post Office Photo

A BUSY TRAFFIC IN MAILS

A triangular device, worked by a lever, which slides it along the platform, enables the man in charge of it to concentrate the parcels wherever the sorters are least busy.



Post Office Photo

A NEVER ENDING BELT

Parcels are here seen being brought up on an endless "belt" and automatically filling the baskets. As soon as one is full the man pushes up another to take its place and so on.



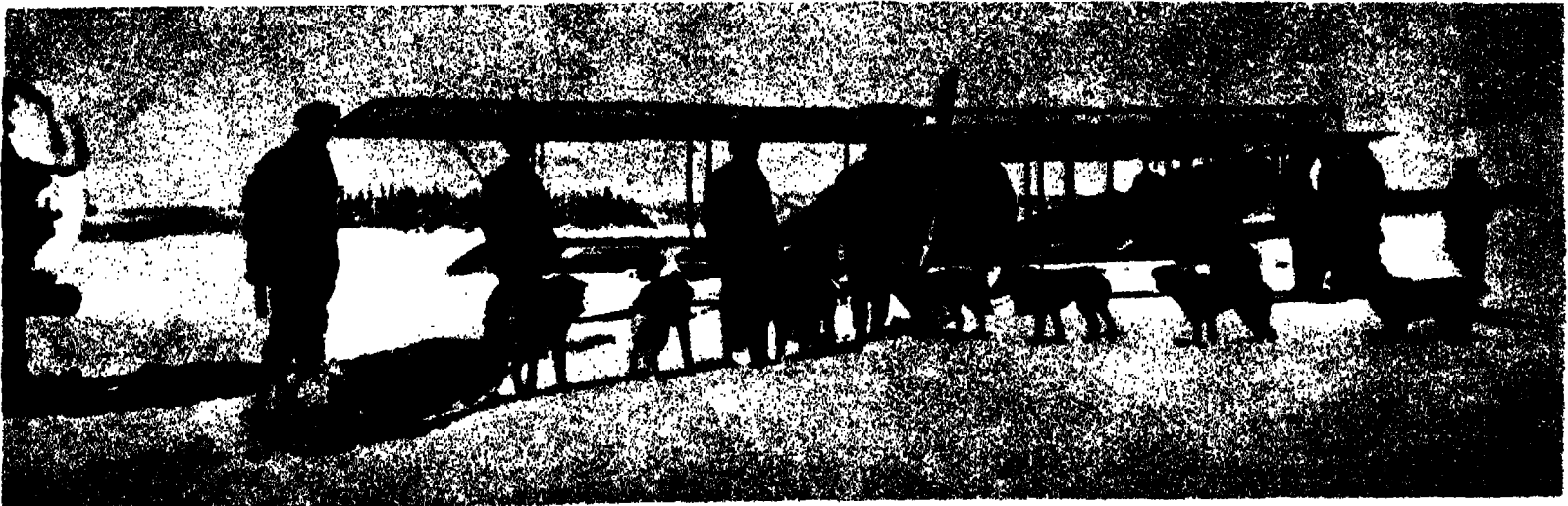
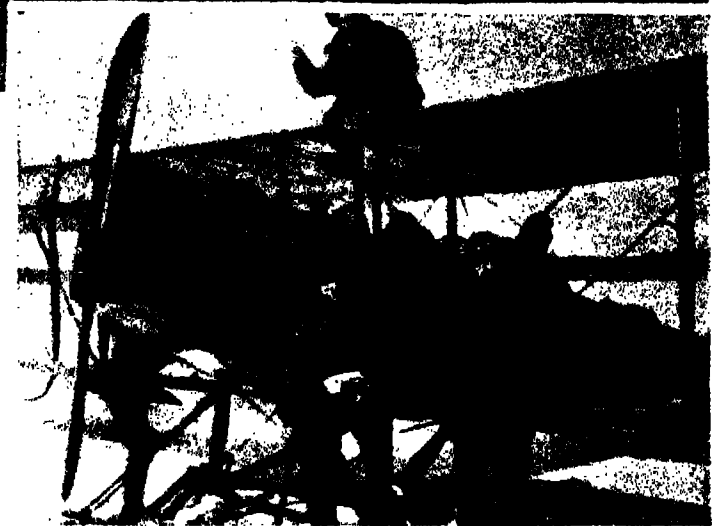
THE WONDERFUL POST OFFICE TUBE

A wonder of the world, the only one of its kind in existence, is the "post office tube" which runs under London. The bags of mail are loaded on to the canvas covered trucks which are wheeled across the narrow platform on to the train.



A GIANT AERIAL "POSTMAN"

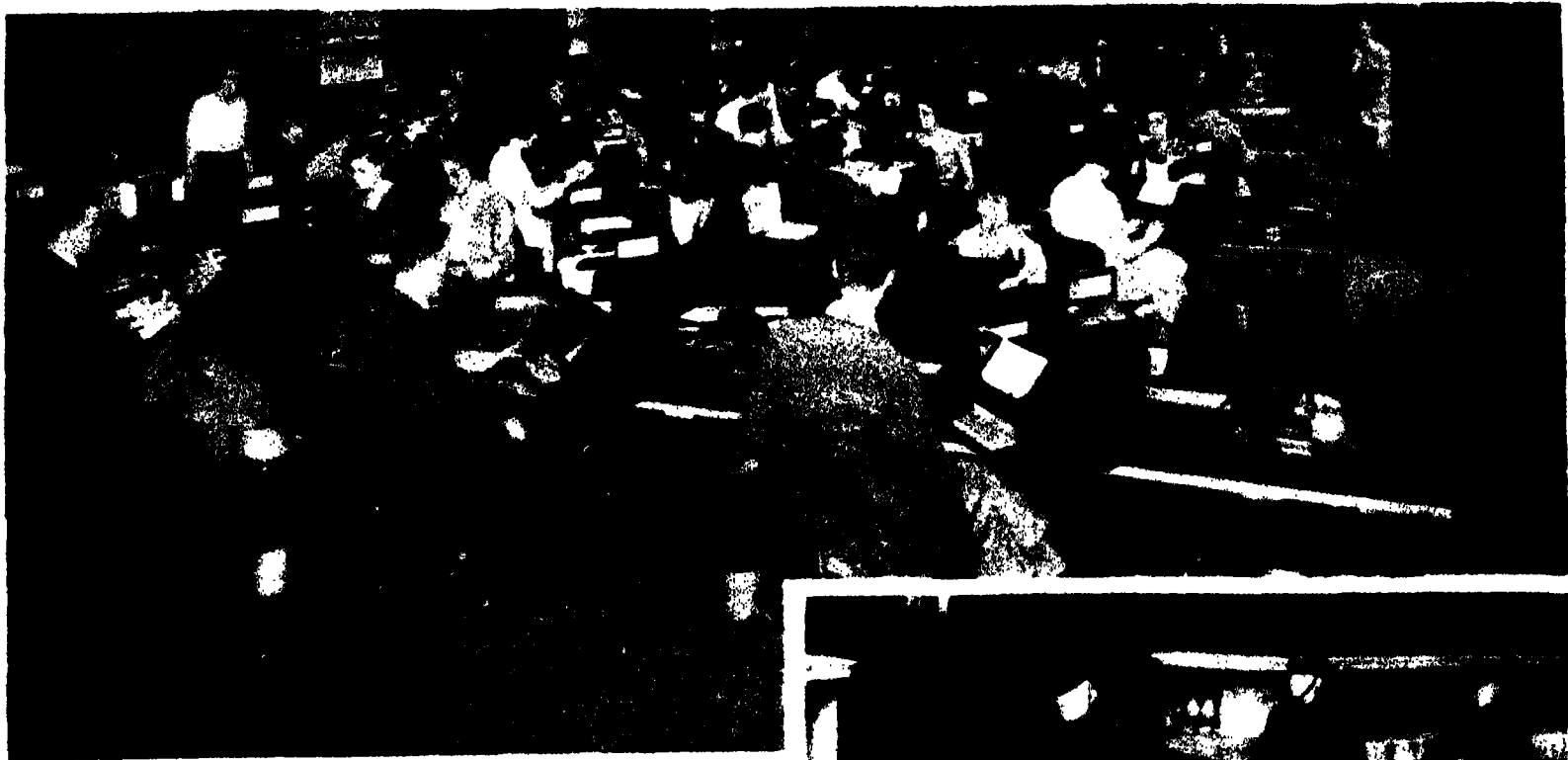
"By air mail" is becoming more and more common as a means of sending letters rapidly over long distances. Large planes are now used to convey mails daily to the Continent and at regular intervals to India, Cape Town, Australia, Siberia and to the extreme south of South America. Aeroplanes are also being extensively used for carrying mails in the wild parts of the earth. Right: In Canada they are used for the north-west, even in the depths of winter; skis then being fitted to the plane to enable it to land or take off safely on the snow-bound wastes.



THE MEETING OF THE OLD AND THE NEW

But the old-fashioned sledge and dog team are still used for carrying mails shorter distances, and to meet the planes.

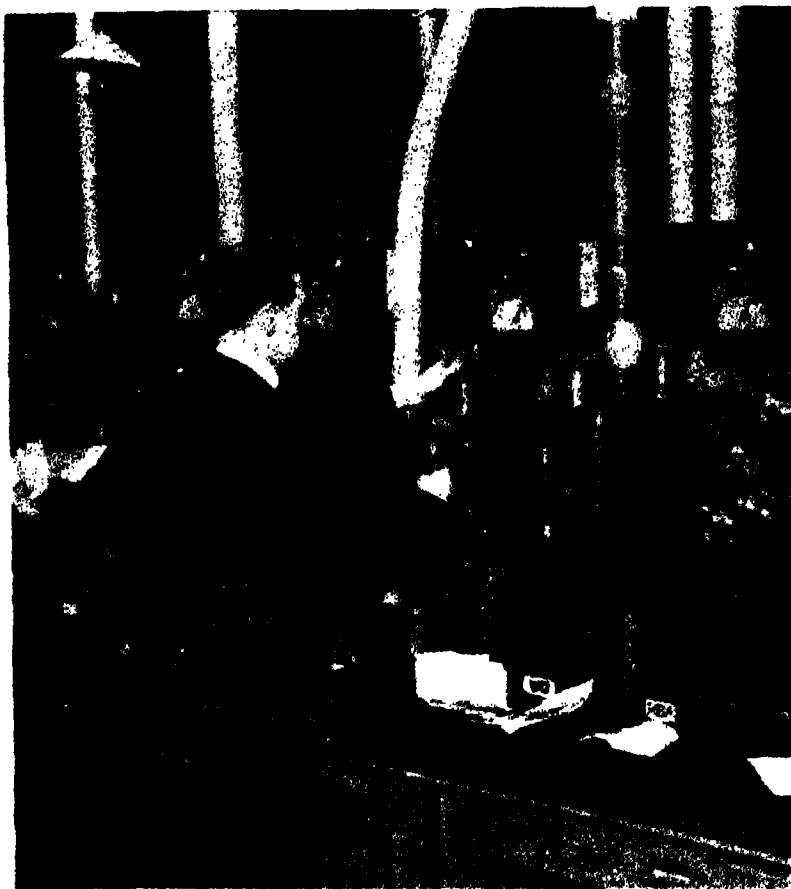
HOW MAN TALKS TO MAN



Post Office Photo

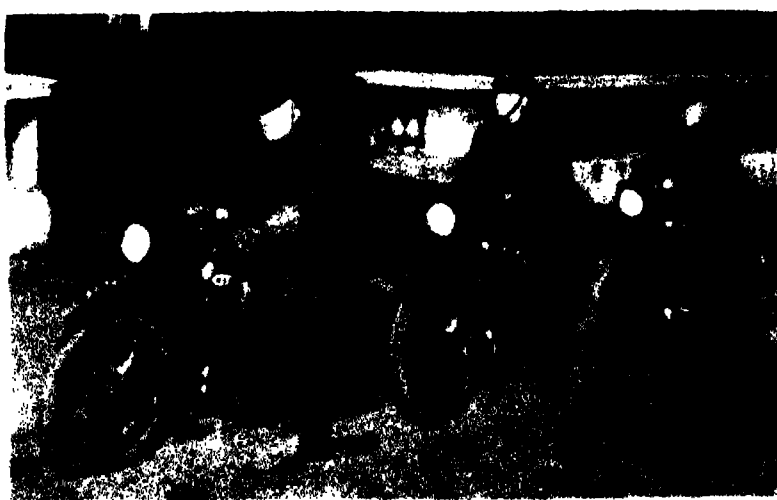
TAPPING OUT YOUR MESSAGES

The most up-to-date method of sending telegrams is by "teleprinter." The operator taps a keyboard like a typewriter and the message is printed at the other end.



A TELEGRAM UNDERGROUND TUBE

Every mechanical device is used to speed up the work of the post office. To accelerate the delivery of telegrams a pneumatic tube runs under London from the Central Telegraph Office to Victoria, Piccadilly and other centres. The telegrams are put into holders and are shot under London, by air pressure, to their destination. A telephone subscriber has only to lift his receiver, ask for "telegrams" and is put through to the "phonogram" room at his particular centre. This naturally saves much time.



THE LATEST TELEGRAPH "BOY"

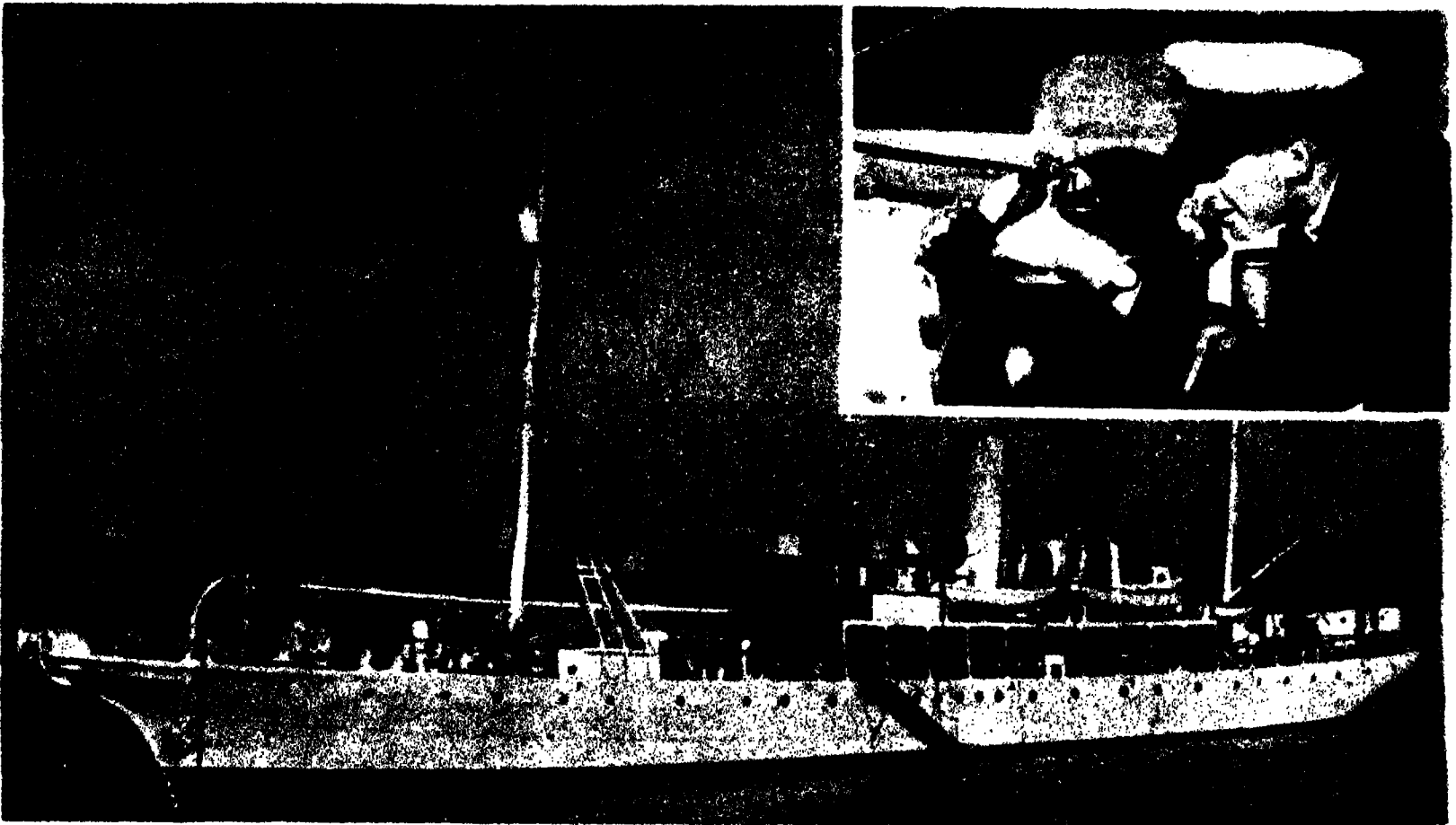
The demand for speed has led to the introduction of a motor-cycle squad in many large cities to displace the boy on the "push bike." Also, many "telegrams" are telephoned. Thus saving still further time and money.



AN UP-TO-DATE TELEGRAPH OFFICE

Overhead is a mechanical conveyor which carries the messages from each operator to the chute in the foreground where the messages drop. The chute is made of chains so that it is easy to see if any telegrams are inside.

HOW MAN TALKS TO MAN



SENDING MESSAGES UNDER THE SEA

"Cable" is the name popularly given to telegraph messages which are sent over wires which lie on the bed of the ocean. Before the introduction of the radio telephone, the cable was the only method of sending messages round the world in a few hours. The cable ships lay new cables and repair any breakdowns. Inset: By means of a very delicate instrument on board it is possible to tell when the ship is over a cable. Here the chief officer lays a course across a cable.



RAISING THE CABLE FROM THE BOTTOM OF THE OCEAN

The grapnel, to haul the cable to the surface, goes down over the bow sheaves. An officer sits on the hawser attached to the grapnel. By the "feel" of it he can tell when the cable is fast on the grapnel. The grapnel is then hauled up, bringing the cable with it. Inset: The grapnel, with its four large hooks being lowered from the ship to the bottom of the sea.

HOW MAN TALKS TO MAN



A BUSY SCENE OF ENDLESS ACTIVITY—FOR YOU TO SPEAK ALONG A WIRE!

The next step in the development of modern communications was the invention of the telephone. Many telephone exchanges are worked by hand. This is the interior of a large "manual" exchange, Gerrard, in the London area. "Automatic" exchanges, however, are rapidly replacing the older manual type. *Inset*: Rural automatic exchanges have made it possible to establish telephonic communication in areas which could not previously be served. There is nobody in charge of this automatic exchange in a lonely part of the Highlands of Scotland. Such exchanges are visited periodically by inspectors.

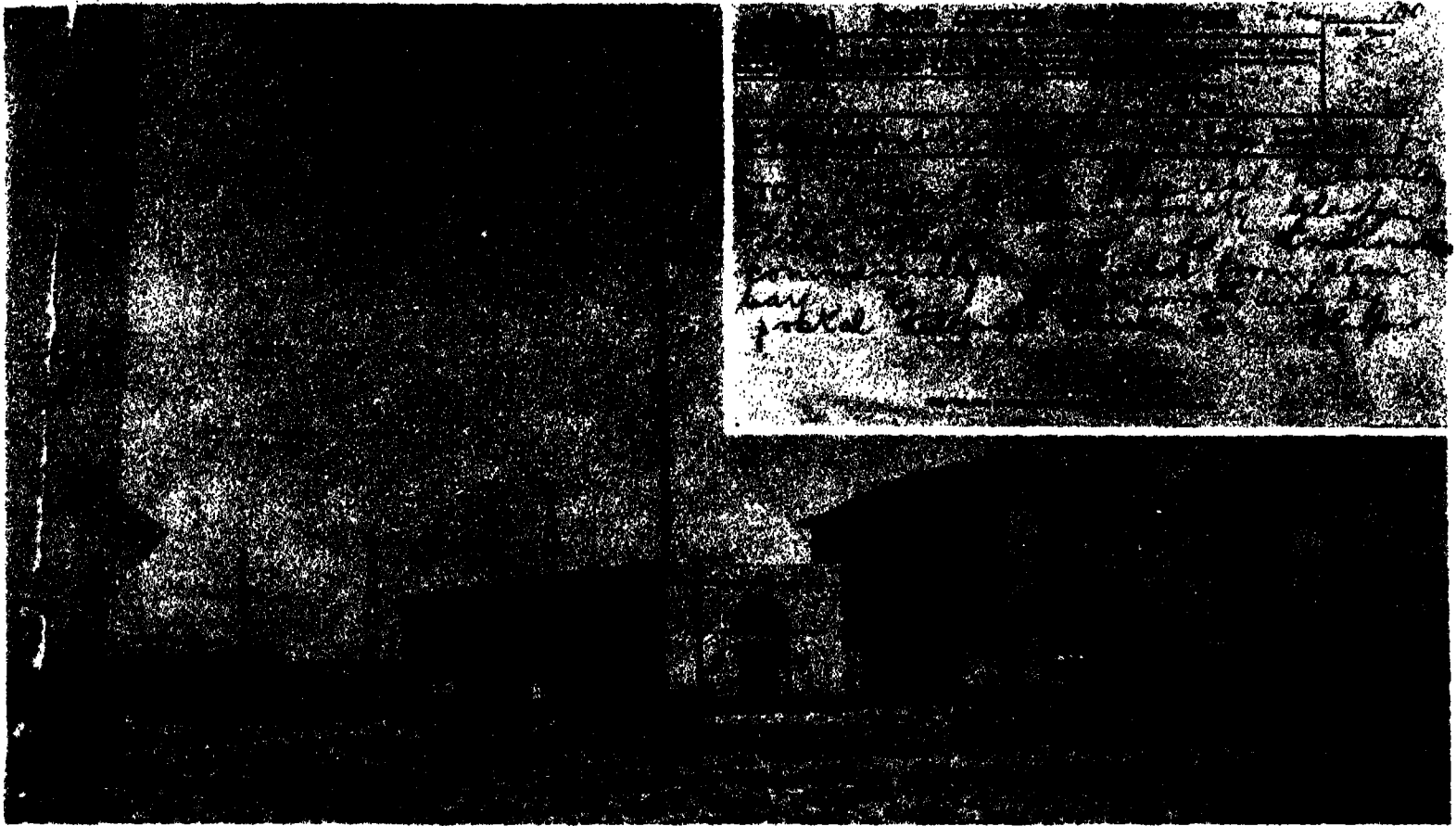


Canadian National Railway

FROM FROZEN NORTH TO ENGLAND'S HOUSETOPS

Cables carrying the telephone wires of the more important "lines" in England are run underground. But the old-fashioned poles are still used in many parts. Here is rather an unusual type of telephone "pole" used in the Hudson Bay area of Canada. In this district for miles the country is covered with muskeg, a spongy sort of growth which offers no solid support for any heavy weight. Deep down below the muskeg is solid ice. To erect heavy telephone poles on such ground would have been almost impossible, and to dig down to the solid ice so expensive as to be impracticable. The difficulty has been solved by three light poles which just rest on the ground, or perhaps sink in to a depth of three or four inches. This picture was taken in winter time. *Inset*: Repairing overhead cables in the city districts of England often necessitates hanging from the cables in a kind of swing—which requires a sound nerve. These cables are favourite resting places for birds.

HOW MAN TALKS TO MAN



Post Office Photo

THE WORLD'S LARGEST TRANSMISSION STATION

Rugby is the biggest and most powerful wireless transmission station in the world. The long-wave aerial system is supported on 12 insulated steel masts 820 feet high and weighing about 200 tons. The short-wave aeriols are carried on self-supporting steel lattice towers. Twenty-seven have already been erected. There are seven short-wave transmitters and one long-wave. *Inset:* The first wireless message which was sent from Alum Bay to Glasgow via Bournemouth.



Marconi Photo

EVER READY FOR AN "S.O.S."

The "wireless operator" soon became an important member of the crew of all sea-going vessels. Here is the wireless cabinet of a modern liner where the amount of business is so great that the wireless cabin is like a miniature post office.

HOW MAN TALKS TO MAN



LINKING UP THE CONTINENTS

Post Office Photo

The International Exchange, London, is the vital centre through which go the overseas telephone calls of the world. When South Africa wants to have a chat with Australia the call comes through London. So does a call from North America to Australia. With the help of this exchange calls can be made also to India, Brazil, Argentine, and Egypt. The operators are specially picked and are good linguists. The switchboard is conveniently divided into various sections representing the towns to which calls can be made. The International Exchange is also the link between the Continent and America. *Inset:* The trans-Atlantic telephone is now extensively used on the big liners. Here is a picture of a "stockbroker's office" on board a liner. The prices of Wall Street and London come through to the man at the telephone. The boy marks them up on the board and the stockbrokers transact their business, thus losing no time whilst travelling.

MAN'S TRADE AND INDUSTRY

THE drama of industry escapes us, because we are so near it, and so much part of it, all our lives. Yet perhaps nothing in the world is so impressive as the turmoil of industry. Man has erected greater and greater plants and factories to serve his needs; from tiny workrooms where cloth was woven, he has come to huge factories where hundreds of power looms weave cloth faster than could a thousand hands; from poky blacksmith's forges he has come to vast blast furnaces; from cobbler's shops to factories—and areas of factories—where nearly every process of boot manufacture is undertaken by machinery.

In industrial countries, like Great Britain and the U.S.A., Germany and France, the whole of life hangs upon industry. We watch its fortunes day by day, pore over newspapers to read of trade declines or trade booms, discuss protection and free trade, rationalisation and reorganisation, for as industry prospers, so, we feel, may we. And yet we give very little thought to the processes and the complexity of industry. What happens to the table knife or the razor blade before it comes to us to use, we hardly know. What labours and what complex industrial processes have occurred before we carry a new teapot to the tea table, we seldom stop to think. We accept all that life offers—motor cars and tube railways, cinemas and the printed book, clothes and tinned food, services which bring gas, water and electricity to our homes—without much thought as to what man does so that we may have these things at our beck and call. Industry is too vast, too complex, too intricate. The mind cannot encompass it all—it reels at its bigness.

The Unknown Thousands who Labour for Us

Yet no matter what we are or do, we depend on it. We depend on the thousands of obscure workers, sweating before furnaces, ladling out molten metal, on chemists testing substances in laboratories, on technicians poring over plans which would be a maze of lines, worse than a Chinese alphabet, to us; we depend upon all of them. Whether we live in retirement on our dividends from industry, or make speeches in

the House of Commons, or spend our day totting up figures, or deal out goods from behind a counter, industry serves us and we serve industry. We fit into the jig-saw puzzle of modern industry at some point, but so complex has industry become that we may hardly know it. We may never see the finished product we are helping to make, to transport or to sell. A native rubber worker in Malaya, tapping the trees for the valuable latex, may never see the uses to which his product is put—vulcanised pipe stems, goloshes, bicycle tyres, inner tubings—the worker in a tyre factory may never see a rubber tree. An accountant in a city office, checking figures all day long, may never realise what industrial products those figures represent—steel ingots, gold bars, iron pipes, cups and saucers, walls of concrete. Even a worker in a factory, engaged in one process day after day, may see little or nothing of the article he is helping to make.

It is because of this complexity, this specialisation of industry, that, while we can understand our own particular jobs, the whole drama is beyond us. For this reason it is as well, from time to time, to take up a book, or look at pictures, which will reveal to us something of the process as a whole. Perhaps few of us will visit steel works. They are impressive, perhaps, but not pleasant places to visit. Indeed, they are sometimes rather frightening. The dry heat catches the throat. The fumes and the stink are a little too much for us. We leave the places to the workers in them—they are used to it, we think, and can stand it. But if we cannot visit them we can understand them through photographs. Here are furnaces which generate incredible temperatures, at which solid iron ore becomes incandescent and flows like quicksilver; there a rolling mill which seizes heavy bars of white hot steel as though they were straws and rolls and flattens them as though they were putty. We get a glimpse of the furies at work by which we are provided with razor blades and pocket knives (and buildings with girders, ships with steel plates, railroads with rails) and some of the hitherto unfathomable processes become plain to us—the mining of metal, the melting, ladling, forging, pressing, stamping of it, the manufacture

MAN'S TRADE AND INDUSTRY

of articles we need, trifling articles, too, they had once seemed. We are familiar with the daily miracle of the black rock we turn into flame in our household grates. Here is a greater miracle: that heavy, durable rock we handled has become locomotives, or arching bridges, or typewriters.

The Chains of Industry that Link Mankind

And that is by no means the end of it. For one industry serves another. Natives mining gold eight thousand feet below the surface of Witwatersrand may be using drills forged and tested in Sheffield shops; ships unloading coal at Singapore may use cranes which were made on the Clydeside; this native riding a bicycle along a dusty Indian road had it made for him in Coventry. The petrol which drives the 'bus in which you sit may have gushed out of the earth half the world away and heaven alone knows how many thousands of workers have laboured to bring it to you, so that you may now move swiftly and comfortably about the town. Certainly, several industries have co-operated—the boring, refining and distributive industries, to say nothing of the industry which manufactures machinery for oilfields, which may be at the end of the next street your 'bus will pass, for aught you know.

And this shows the interdependence of the world to-day. We may like to think that what we do—how we live—concerns nobody but ourselves, but it does. We may wrap ourselves in our own affairs, but we are still dependent on the work of the rest of the world. Our little actions have their effects; when women abandoned hair nets and hairpins, they put girls out of work in Japan and men out of work in Birmingham. The coal a man mines in South Wales drives locomotives in Canada; the wheat a Canadian farmer reaps (with a Sheffield-made reaper) feeds the miner in South Wales; the cloth a man weaves in Oldham clothes a tobacco planter in Rhodesia; the tobacco the planter grows is destined for the weaver's pipe. Tin mined in Cornwall is plated in South Wales on sheet iron forged in the Black Country, and, bent into tins goes out to the West Indies and comes back to us full of pineapple. The tram-driver depends on the steel industry for his tram rails, on carriage building works for his

car, on electrical works for his motor, the conductor on the paper industry for his ticket, both of them on the coal industry which creates electrical power. And we depend on them to take us to our work—accounting, mining, electrical, whatever it may be.

Workers at the ends of the earth labour for us—gold, rubber, wheat, timber, fruits, oil, nitrates, metal ores, and we, in our turn, labour for them. This interdependence of man can be seen most clearly at home. Whole areas are given up to mining and heavy industry, pottery or textiles, areas in which many things are made, but hardly a hundredweight of food is grown to feed the men who make them. Such areas we all know, the Black Country, the Potteries, the Manchester and Birmingham districts, the Clydeside, South Wales, etc. The food these men eat comes from whole areas in this country where nothing is made but many things are grown—South Downs for sheep, Norfolk and Suffolk for sugar beet and wheat, fruit in the Herefordshire valleys, dairy farming in the Home Counties. And it is this interdependence of the world—industry here upon industry there, worker here upon worker there—which is the significant fact we have to understand if we are to use to best advantage the power industry confers upon us all.

The Power that Drives Man's Machines

All those marvellous machines which make our manufactured articles are to-day driven by the power of rivers, of coal, oil or electricity. We have made power work machines for us. This, among other causes, has resulted in unemployment. In the electrical industry, for instance, one man can turn out 75 bulbs per day, but a machine turns out 73,000 bulbs just as good. But tragic as this unemployment is that the machine has caused, in the long run machine power should be for our good. For we have solved the problems of production. Industry now showers upon us a flood of goods for our use: to the solution of production many brains have worked in co-operation—technician, specialist, scientist, worker, and inventor. It is equally within the capacity of the ingenious brain of man to solve now how man should distribute the goods he can make so well and so plentifully. And once that is done unemployment and its attendant evils should trouble us no more.

LESLIE A. PAUL.

MAN'S TRADE AND INDUSTRY



G.P.A.

THE VERY EARLIEST FORM OF TRADE—BARTER

In Africa to-day are tribes so primitive that even the simplest form of currency or money is unknown. Instead, at an appointed place outside the village the natives come to exchange their surplus stock of food, etc., for other necessities of life.



G.P.A.

A MARKET IN OLD BATAVIA—JAVA

Beside the careless grouping of the African bartering ground, this Batavian market scene seems quite business-like. Mass production, it will be noticed from the rows of cardboard boxes and piles of "soft goods," has spread even to the Far East.



Royal Mail Steam Packet Co.

IN THE SUN-BAKED STREETS OF TUNIS

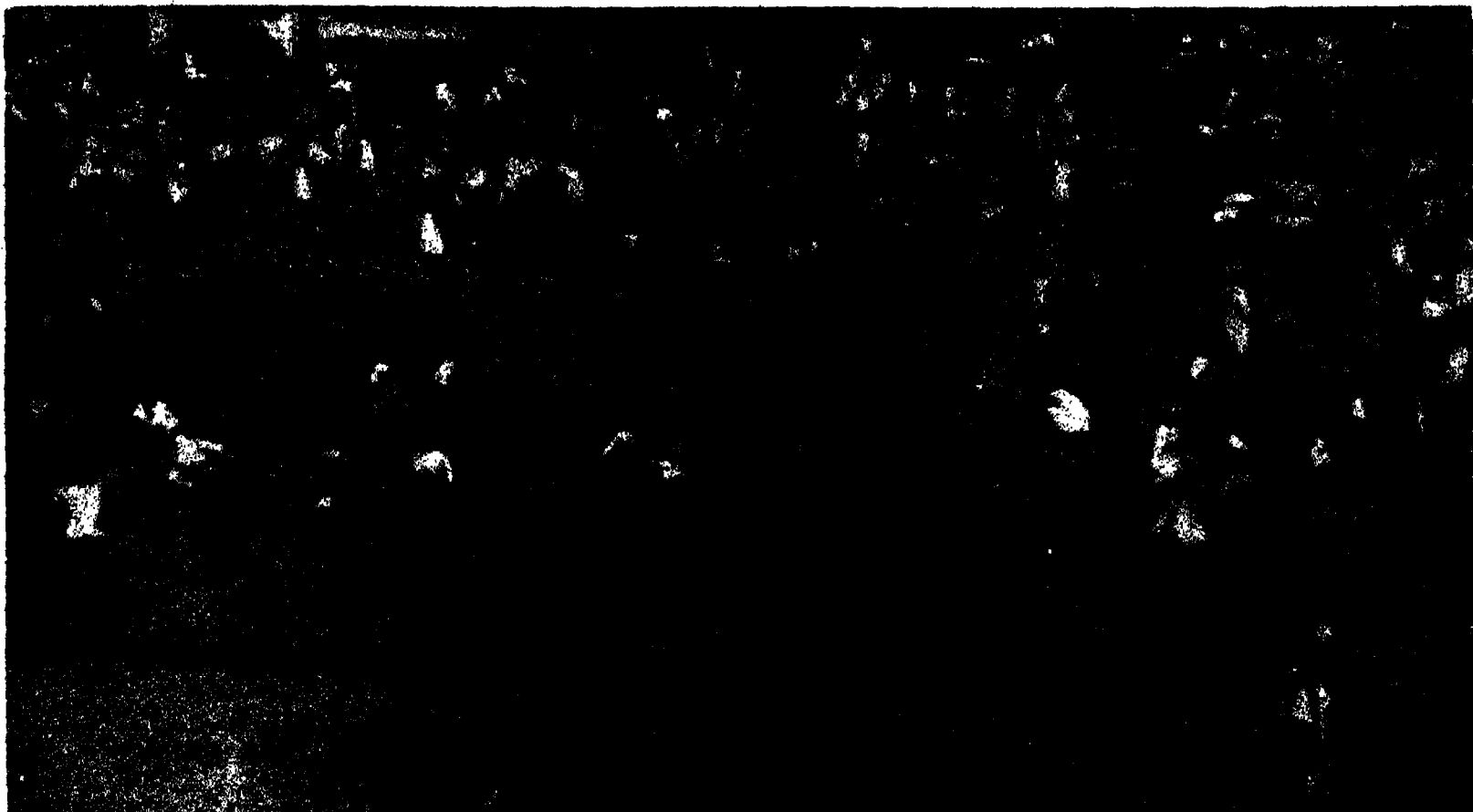
The covered Tunisian market shows a step forward in the evolution of trade; but we would find, if we went there to buy anything, the same primitive ideas about buying and selling shared by the Burmese market-women in the picture below.



G.P.A.

A MARKET IN A GUTTER

These lacquer-haired Burmese ladies in their short white jackets do not seem to mind the absence of customers. The saleswoman on the left is evidently enjoying "a good think"; the party on the right have plenty to say to each other, while the ladies in the centre are passing away the time with brown and white cigars! Selling in the East is a leisurely affair.



G.P.A.

THE SWELTERING CONFUSION OF A WEST INDIAN MARKET

Port-au-Prince, the capital of the West Indian republic of Haiti, holds its market in this hot open square. Farmers and gardeners come from all over the island to sell their goods directly to the consumers. The "middleman" is as yet unknown.



G.P.A.

DOWN IN THE BOMBAY BAZAAR

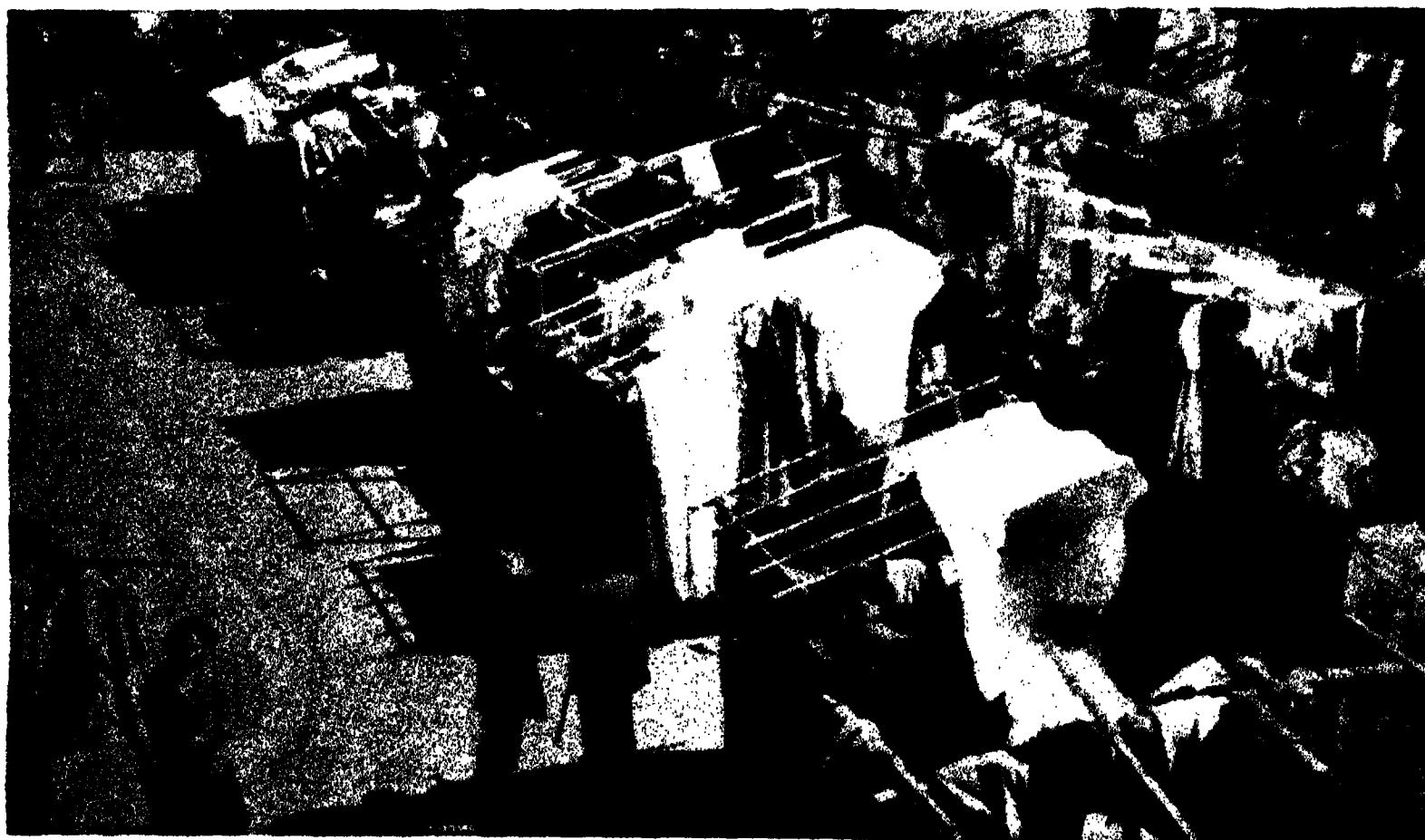
Amid dust, turmoil and smells, much trade is done in the Indian bazaars or markets. This picture shows the Grand Bazaar in Bombay where most of the native population's food is sold. Squalid as this may appear, it nevertheless ranks as an important trade centre. Also, in the bazaars, the views and politics of the day are freely discussed.



ANYTHING AND EVERYTHING IS SOLD AT CALEDONIAN MARKET

G.P.A.

Every Tuesday and Friday is spread this fascinating kaleidoscope of odds and ends and new and old. Everything from valuable furniture and jewels to the most trifling rubbish is on sale—for a day! All traces vanish until the next market day.



ONE OF THE WORLD'S MOST PICTURESQUE MARKETS

G.P.A.

The Rag Fair in Rome—where one can buy old clothes and new, curtains, silks, rolls of cotton or brocade, almost anything you might ask for in cloth or made-up garments. An incredible amount of assorted material is disposed of here.

*Wide World*

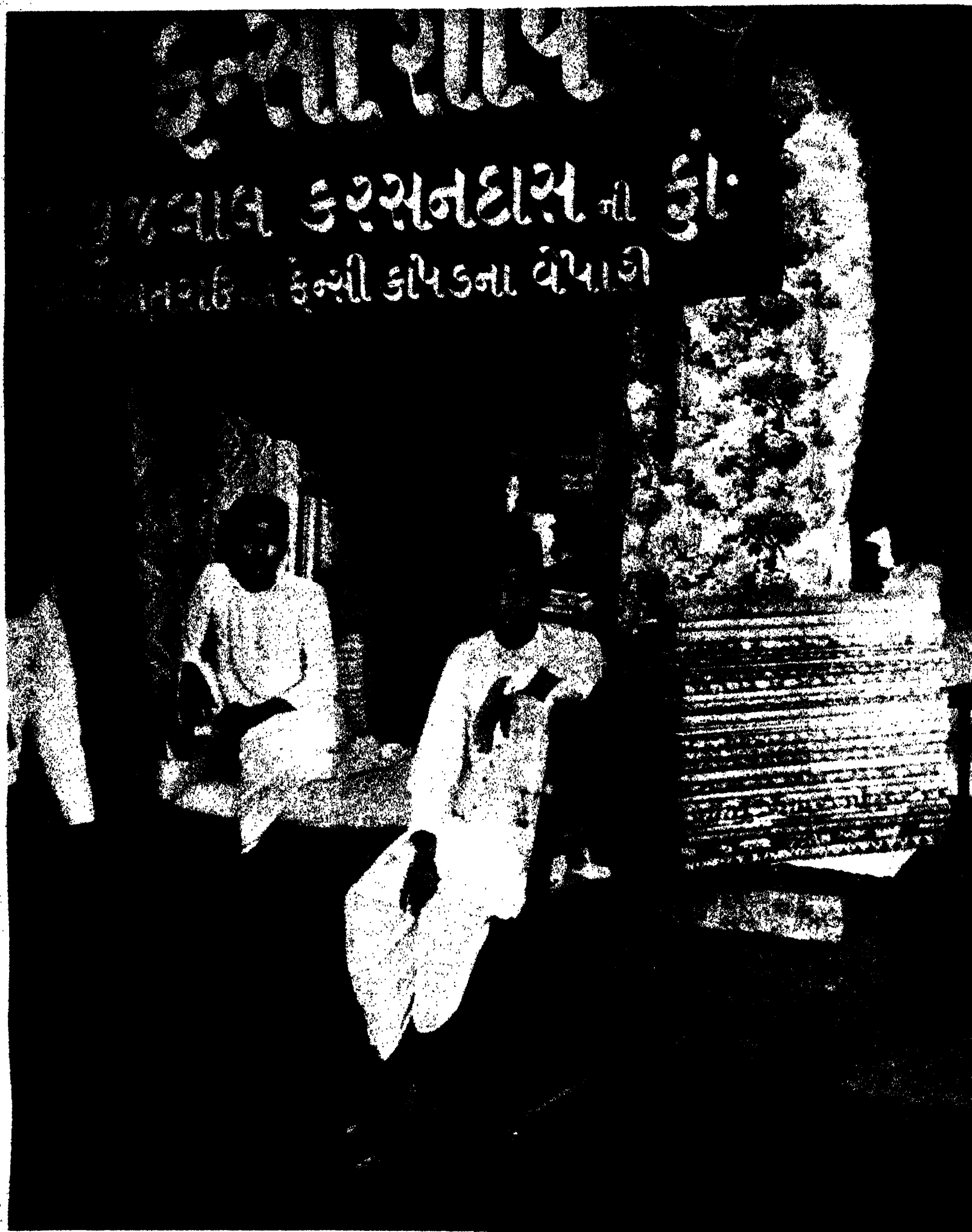
A MARKET FAMOUS ALL OVER THE WORLD

Who has not heard of Covent Garden? The early morning rattle of market carts is a characteristic London sound for miles around. This big covered fruit and vegetable market was first opened in 1661 on the site of what was once the convent garden of the Abbey of Westminster—hence its name that has dropped an “n” somewhere among those hundreds of years.

*Sport and General*

A MARKET THAT HAS ADDED A WORD TO OUR VOCABULARY

Billingsgate fish market has a “language” of its own. Tons of fish are sold each day and an almost foreign touch is added to the busy scene by the quaint hats worn by the porters to protect themselves from too close contact with their wares.



THE BEGINNINGS OF THE SHOP

G.P.A.

This Bombay shop has a chair for customers and a real counter—even though the salesman is squatting on it instead of standing behind. The bales of printed cloth and "Manchester goods" hardly differ in quality or design from the stock of some English village drapery store. The goods, however, are not priced, but fetch what the customer will pay.



G.P.A.

A WALKING COFFEE-SHOP IN CAIRO

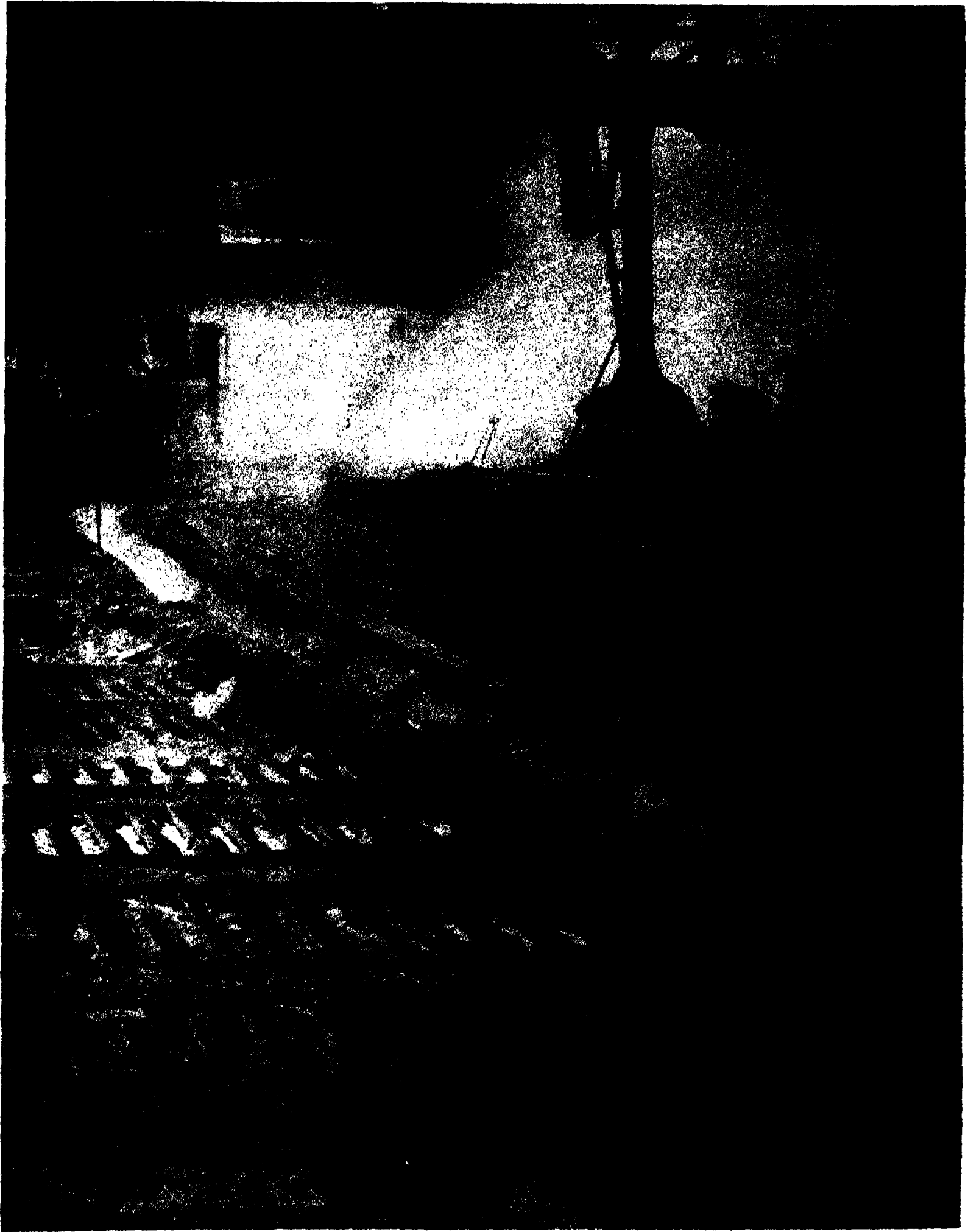
Refreshment is an important branch of business. This travelling Egyptian coffee-seller does a roaring trade in the streets in spite of the none-too-clean appearance of his cups and pots. The lady will wait for privacy before she lifts her veil to drink, since Mohammedan women are strictly forbidden to unveil their faces in the presence of their male folk.



THE FURNACE TOWERS OVER ITS PIGMY MASTERS

Dorman Long & Co.

Steel is the basis of modern industry. From steel—which comes in turn from pig-iron—we get our razor blades and railway engines, our bodkins and our bridges. The blast-furnace in the picture is about to pour its fiery contents down the little gullies made by the men you can see working in the sand beds. Sheffield steel goods are the finest in the world.

*Dorman Long & Co.*

CHANNELS OF SAND FOR A RIVER OF FIRE

In this "close-up" of the base of a blast furnace being "tapped" we see the white hot liquid metal flowing to its moulds. The molten iron is deflected into the "pig beds" by means of the shovel-like instruments placed by the men, as can be seen at the left. There the hot metal will cool into bars or "pigs." This work is carried on in perpetual and trying heat.



A GIANT LADLEFUL OF STEEL IN THE MAKING

Dorman Long & Co.

Molten iron is being poured into a special metal mixer furnace for further treatment before entering the furnace that converts it into steel. The heavy weight moves on overhead rails, and is tipped up as though it were a feather.

*Dorman Long & Co.*

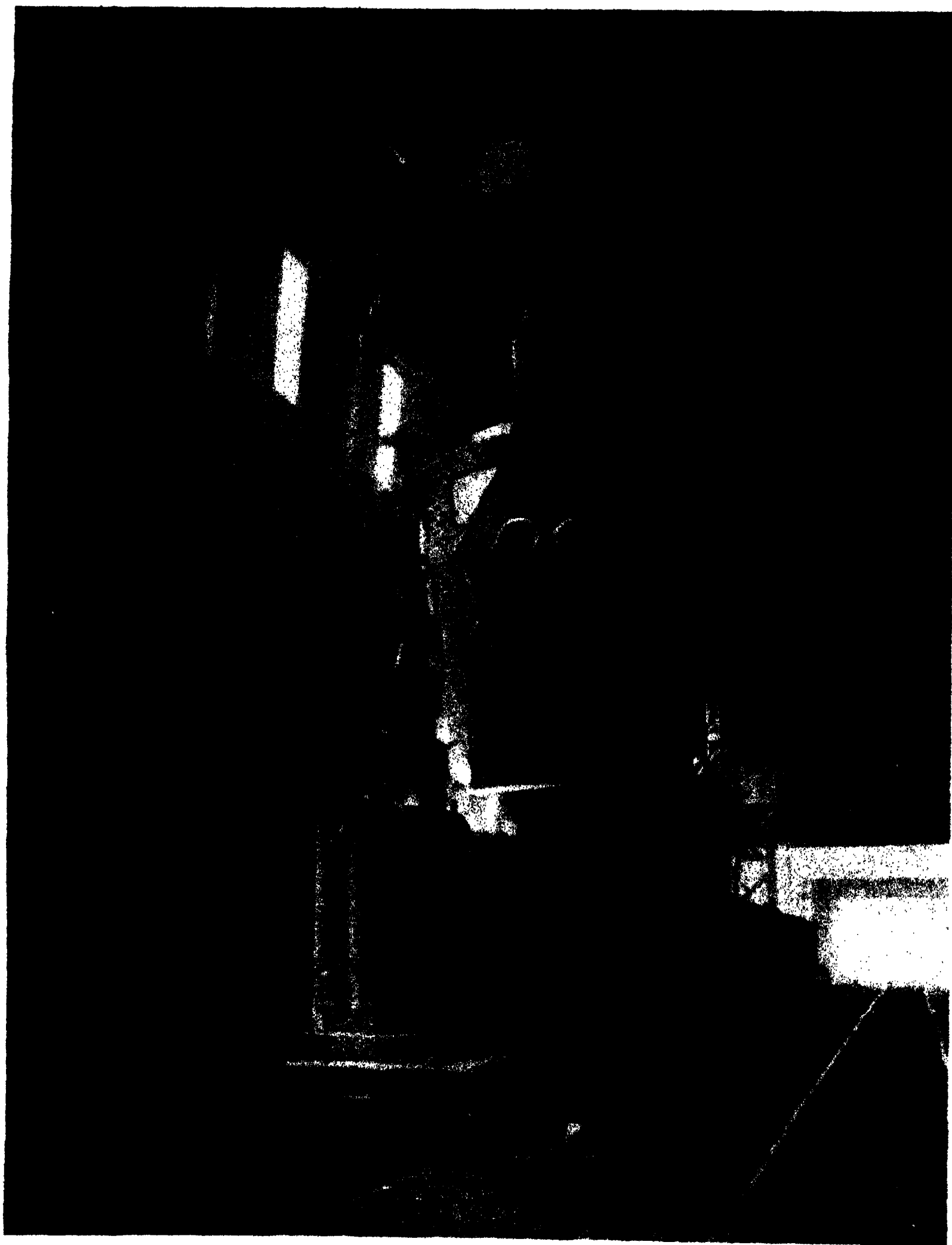
FILLING THE GAPING MAW OF THE FURNACE

Scrap iron is being fed into a steel furnace by means of an electrical charger. The heat is so intense that the mechanic has to direct the whole operation from a specially screened seat on the machine itself. Lighted furnaces spell prosperity.

*Dorman Long & Co.*

A FIERY FOUNTAIN OF LIQUID STEEL

The steel-furnace is being tapped into a ladle holding seventy tons. The overflow on the right is slag-waste which floats on the top of the molten metal. The rising vapour in this ghostly atmosphere is incandescent gas from the boiling liquid.



PONDEROUS WEIGHT OBEDIENT TO A TOUCH

Dorman Long & Co.

This process is known as "teeming." The seventy-ton ladle has been moved over to the other side of the shed and is pouring liquid steel into ingot moulds where it will set into shapes and sizes demanded by varying industrial needs.

*Wide World*

A STRIKING CONTRAST--METAL WORK IN AFRICA

The object upright in the centre is the anvil on which these blacksmiths of the Baluba tribe hammer their metal. Behind is seen their goatskin bellows and in front are their tongs and hammer. For primitive needs these are quite effective.



Wide World

AN ANKLET WEIGHING FIFTEEN POUNDS

Welding a fifteen-pound brass anklet on the leg of a young bride of the Yafouba tribe. In some of these Gold Coast tribes the chief's favourites wear one or two of these heavy ornaments all their lives. Naturally, they are exempt from labour.



Wide World

THE FINISHED ARTICLES

Here are three favourite wives proudly displaying their uncomfortable rings. As can be seen from this picture, these are sometimes so wide that the foot is lifted right off the ground when the wearer sits down—such are the dictates of fashion.



ROLLING A RAIL

Dorman Long & Co.

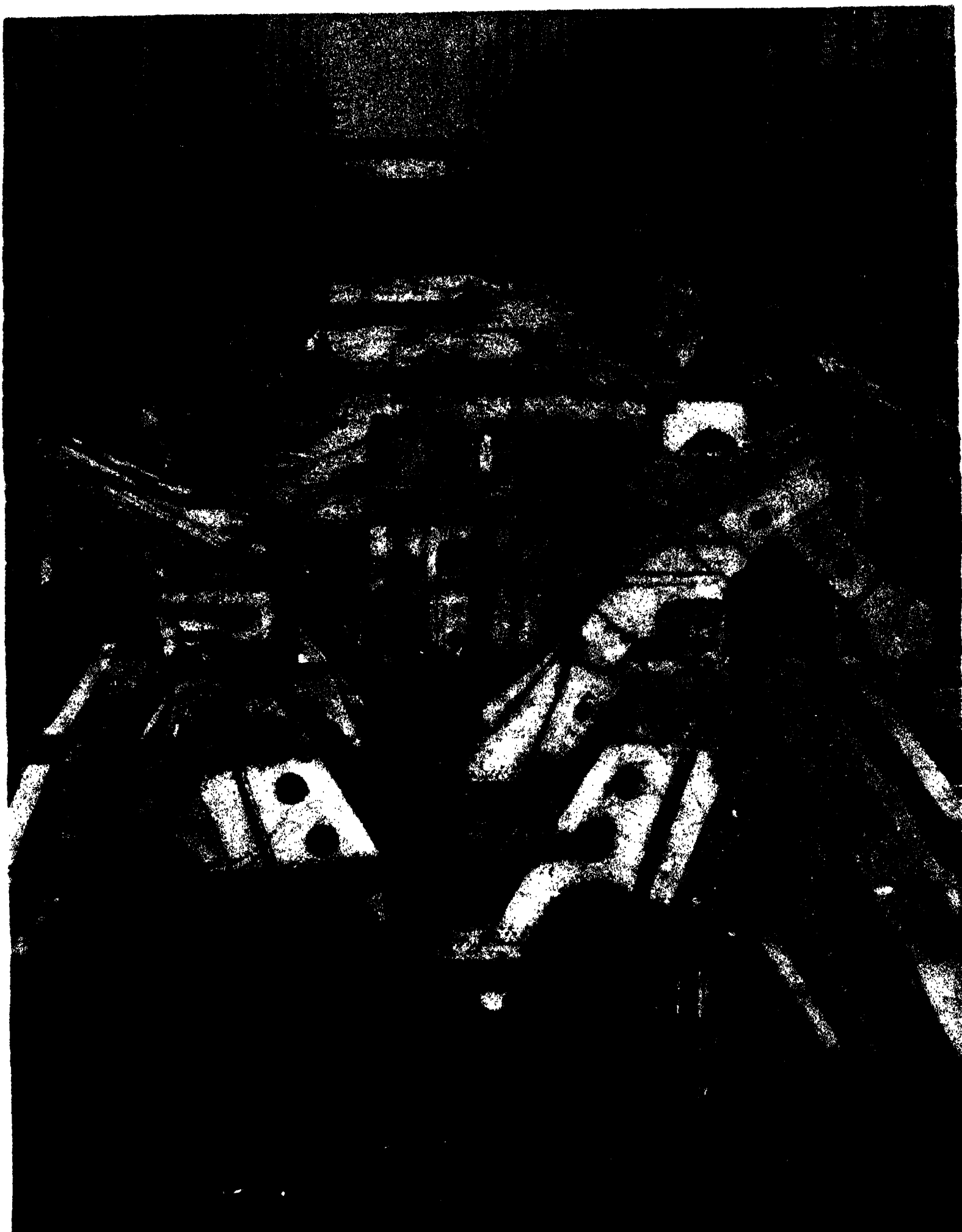
Under intense pressure, between heavy rollers and amid the hissing of steam, the red hot steel rail begins to take shape.



STEEL IN THE SERVICE OF TRANSPORT

S.C.R.

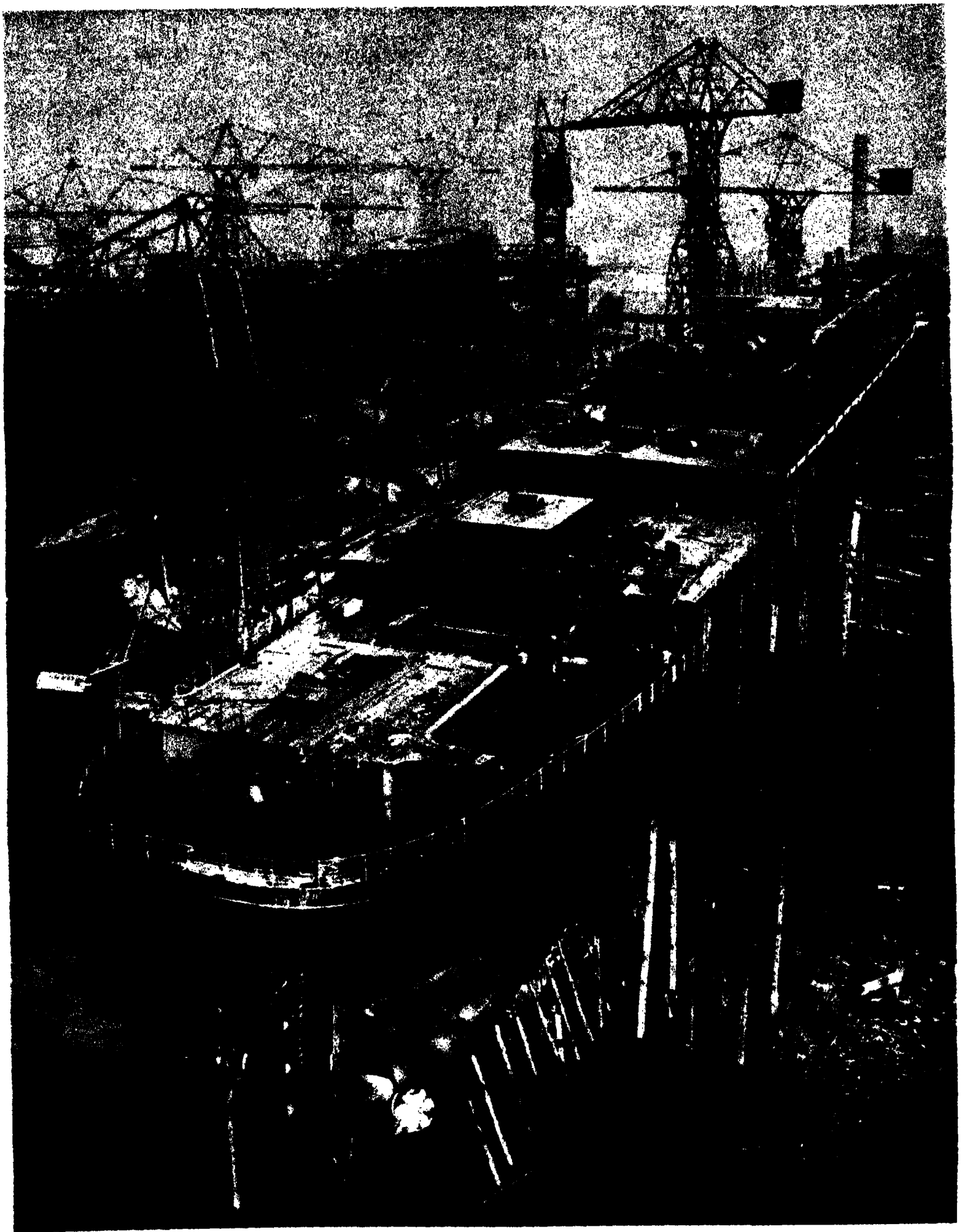
Russian workmen laying rails in a cutting during the construction of the famous Turksib (~~Turbo-Siberian~~) Railway.



HEARTS OF STEEL

Vickers Armstrong

... once built of oak are now built of steel. This is the first stage in the building of the Queen of Bermuda. The ship is taking shape in the stocks. The picture is taken looking aft. In the foreground can be seen the keel, while right and left of it are the sockets for the twin propeller-shafts. The modern luxury liner costs well over £2,000,000 to build.

*Vickers Armstrong*

THE GREATEST MOMENT APPROACHES

After long months of work the ship is ready to be launched. The enormous props will be taken away, and slowly the leviathan of steel will run down the slipway to the main river or sea. The finishing touches are added when the ship has left the dock and been floated. In this picture, for instance, the ship has as yet no funnels or captain's bridge.



Quarry and Roadmaking

ROAD DRILLS WITH SILENCERS

Few of us regard road-making as an industry—yet it is an important one. The pneumatic drill is perhaps the most familiar “weapon” of the road mender, but these men are using new models mercifully fitted with silencers.



Quarry and Roadmaking

AN INGENUOUS ROAD-MACHINE

This machine is filled with the dry cement materials in proper proportion when it leaves the works. The funnel shaped barrel containing them revolves as the machine travels and the cement is ready mixed on arrival.



Quarry and Roadmaking

LUXURIOUS MODERN ROAD SURFACES

A view of the road between Brighton and Seaford in course of construction, showing its great width and smooth surface.



E.N.A.

TRINIDAD HELPS US TO MEND OUR ROADS

The famous pitch lake of Trinidad. Here many thousands of tons of semi-solid asphalt are dug and exported each year, but always the holes are gradually filled up with fresh supplies from below. The “lake” has an area of more than 114 acres.



Malayan Information Agency

THE FIRST STAGE OF A GREAT INDUSTRY

Rubber is one of the great industries of the world. The precious sap oozes from cuts made in the trunk of the tree and is collected in cups by native workers. The Federated Malay States provide the majority of the world's supply.



Malayan Information Agency

CURING THE RUBBER

Buckets of the milky fluid—or latex, as it is called—are carried back to headquarters where the liquid is heated and solidifies into crude rubber—very different from rubber as we know it. The crude rubber is turned into sheets and vulcanised.



WASHING THE RUBBER

Malayan Information Agency

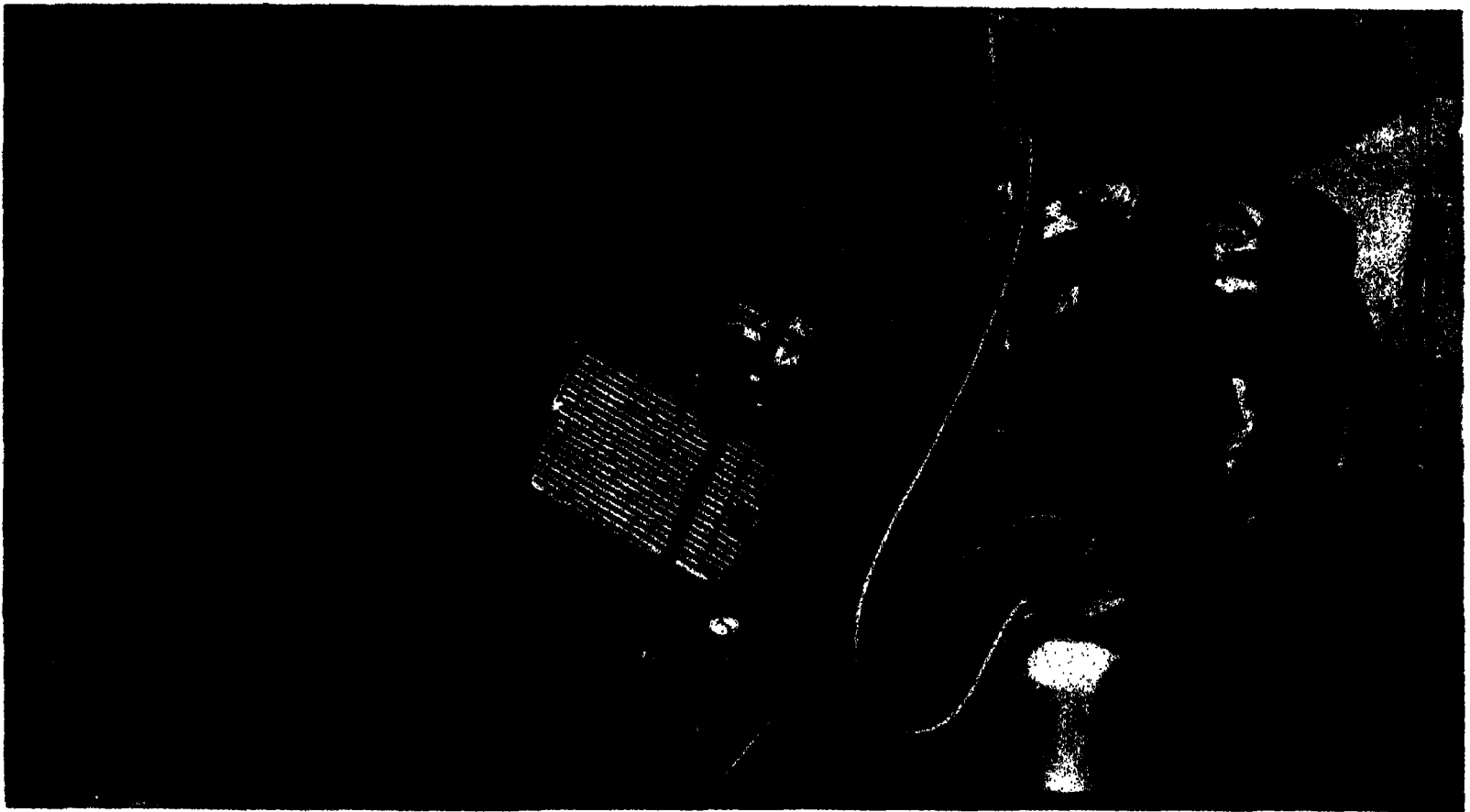
These native workers in Malaya are washing sheets of raw rubber to get rid of impurities before packing and exporting them to England. There the rubber will be strengthened and hardened for a myriad uses, from motor tyres to shoes.



CREATING A CAR—PART ONE

Merida Motors

From rubber to tyres and tyres to cars is but a step. Here is a view of the mass production of cars. Each one begins with a bare frame loaded on to the conveyor belt and as it winds through the workshop the chassis is fitted with all its parts.

*Morris Motors*

PART TWO : HIGH-SPEED PAINTING

The completed chassis, that is, the wheels frame and machinery as distinct from the body, rides on rails into this turning machine, where skilled operators paint it as it revolves with fine high-pressure sprays that penetrate to every corner.

*Morris Motors*

PART THREE : TWENTIETH-CENTURY COACH-WORK

While the chassis grows on one conveyor the body grows on another. In this vast shop the body is erected as it travels on the belt, down to the last piece of upholstery. No effort is spared to achieve maximum comfort and efficiency for the user.



THE TITANIC FRAMEWORK OF A MODERN SILO

I.C.I.

Like a huge hangar for a super-airship rise the reinforced concrete ribs of this gigantic silo, or store for fertiliser and green crops. This silo holds 100,000 tons, which will be used by farmers to improve their crops, and to save them in rainy seasons.



A MAGIC MOUNTAIN IN A CAVE

I.C.I.

This astonishing photograph was taken inside the silo and shows the fertiliser, sulphate, falling like snow from the roof that is too high to be seen, and making white mountains on the floor. The steel arm on the left levels the "mountains."



C.E.B.F.

THE BIRTH OF A PIECE OF WIRE

The making of wires and cables is a valuable industry of its own. This man is tapping an electric aluminium furnace.



C.E.B.F.

SHINING STRINGS OF RED HOT ALUMINIUM

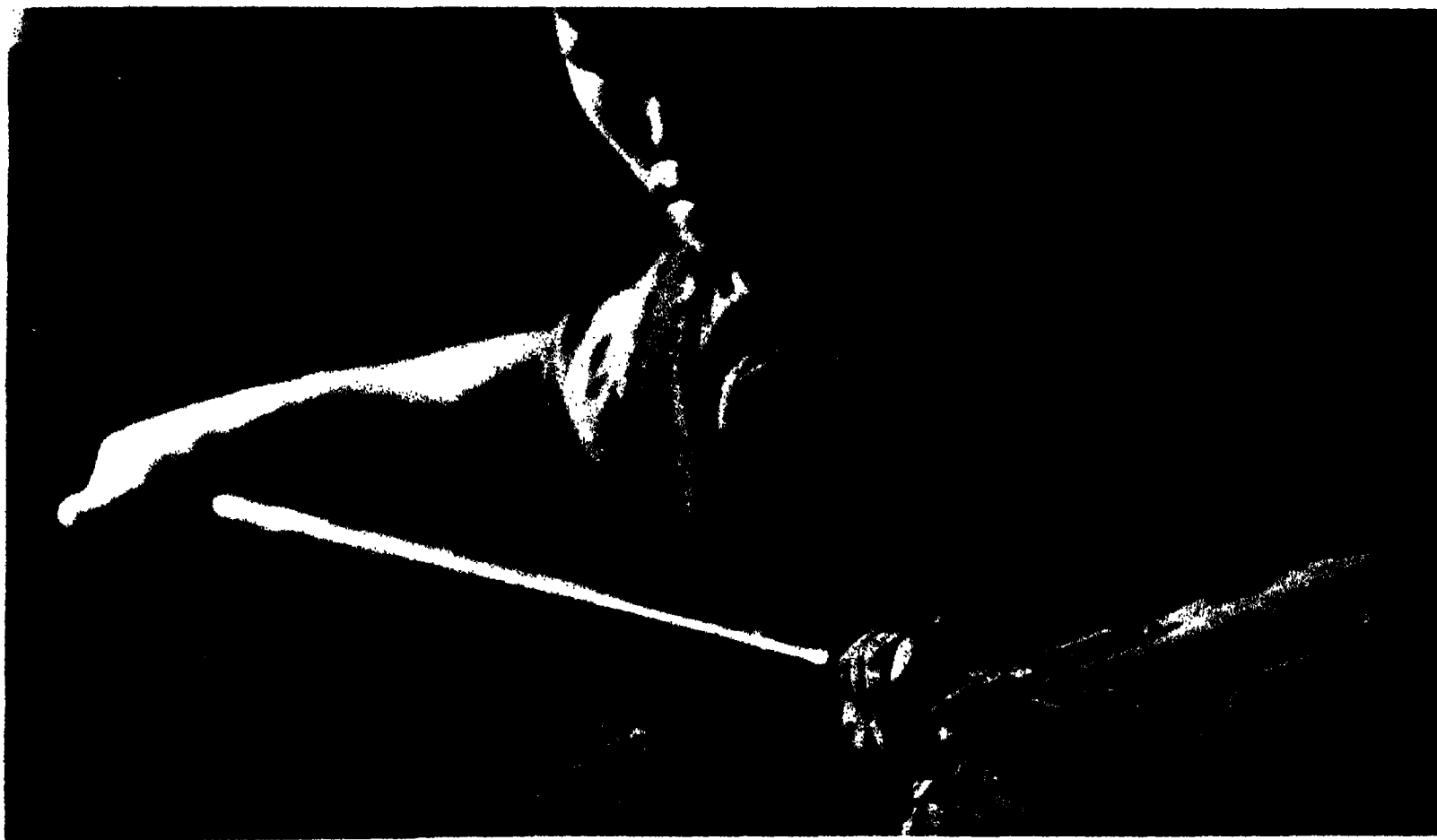
Here the metal is passing through pressing and drawing machines. Aluminium wire is used chiefly for electrical purposes.



THE SERPENTINE STAGE OF A COPPER WIRE

C.E.B.F.

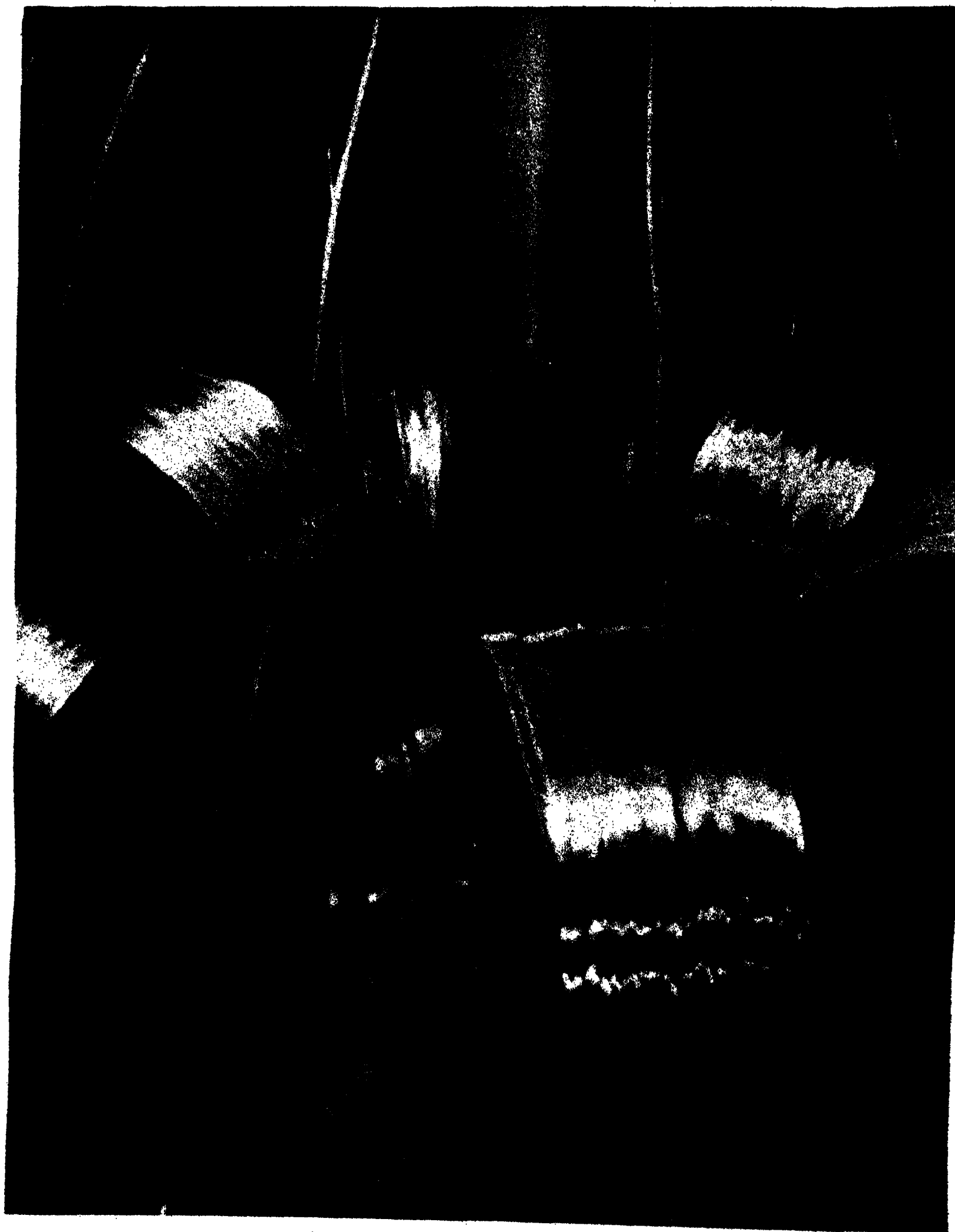
The ingot is passing through rollers which lengthen and shape it. This is the first stage of turning it into miles of wire.



GLITTERING MOLTEN COPPER

C.E.B.F.

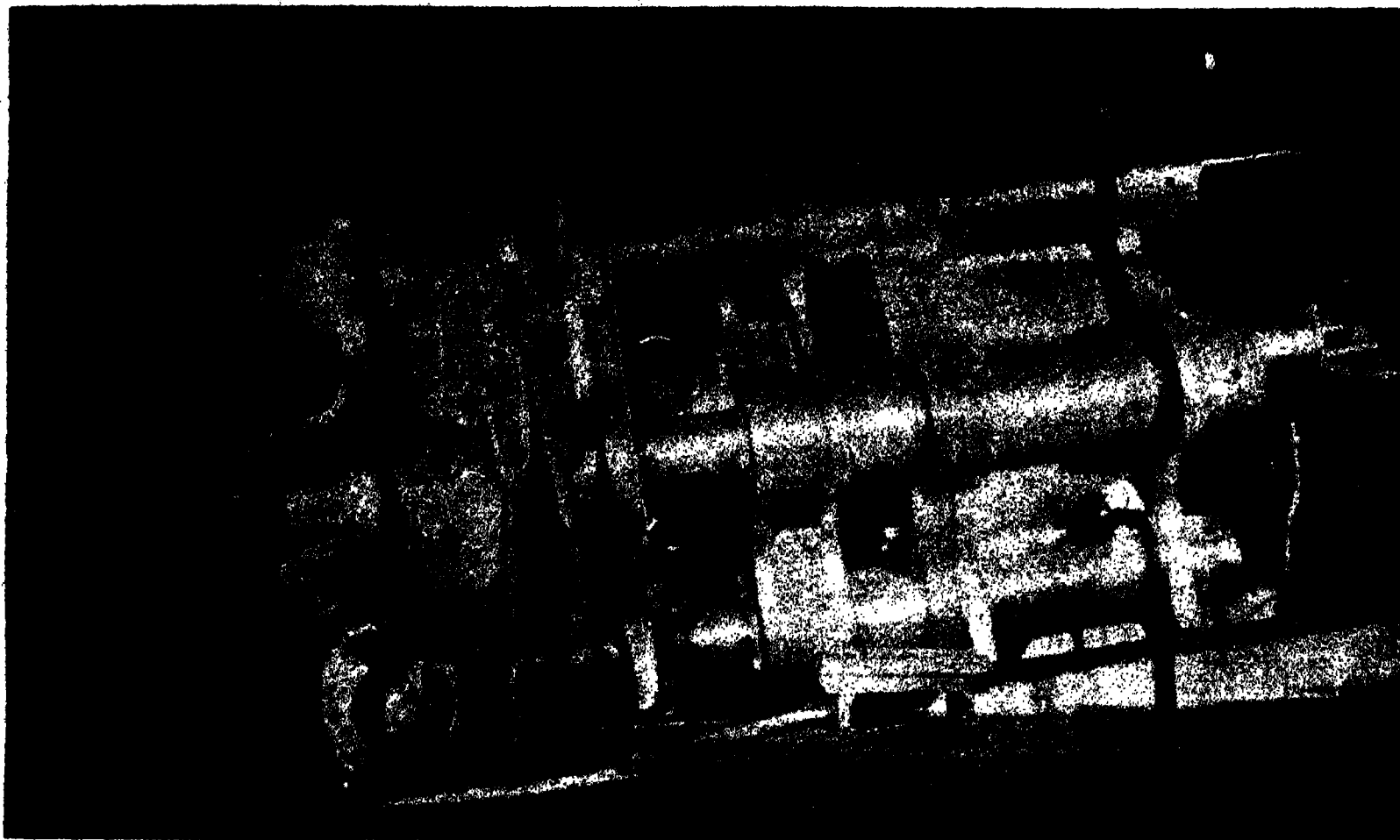
Copper wire is very widely used. Here is a worker carefully pouring a ladle of the shining metal into an ingot mould.



THE DEFT MACHINE THAT TWISTS A CABLE

C.S.B.F.

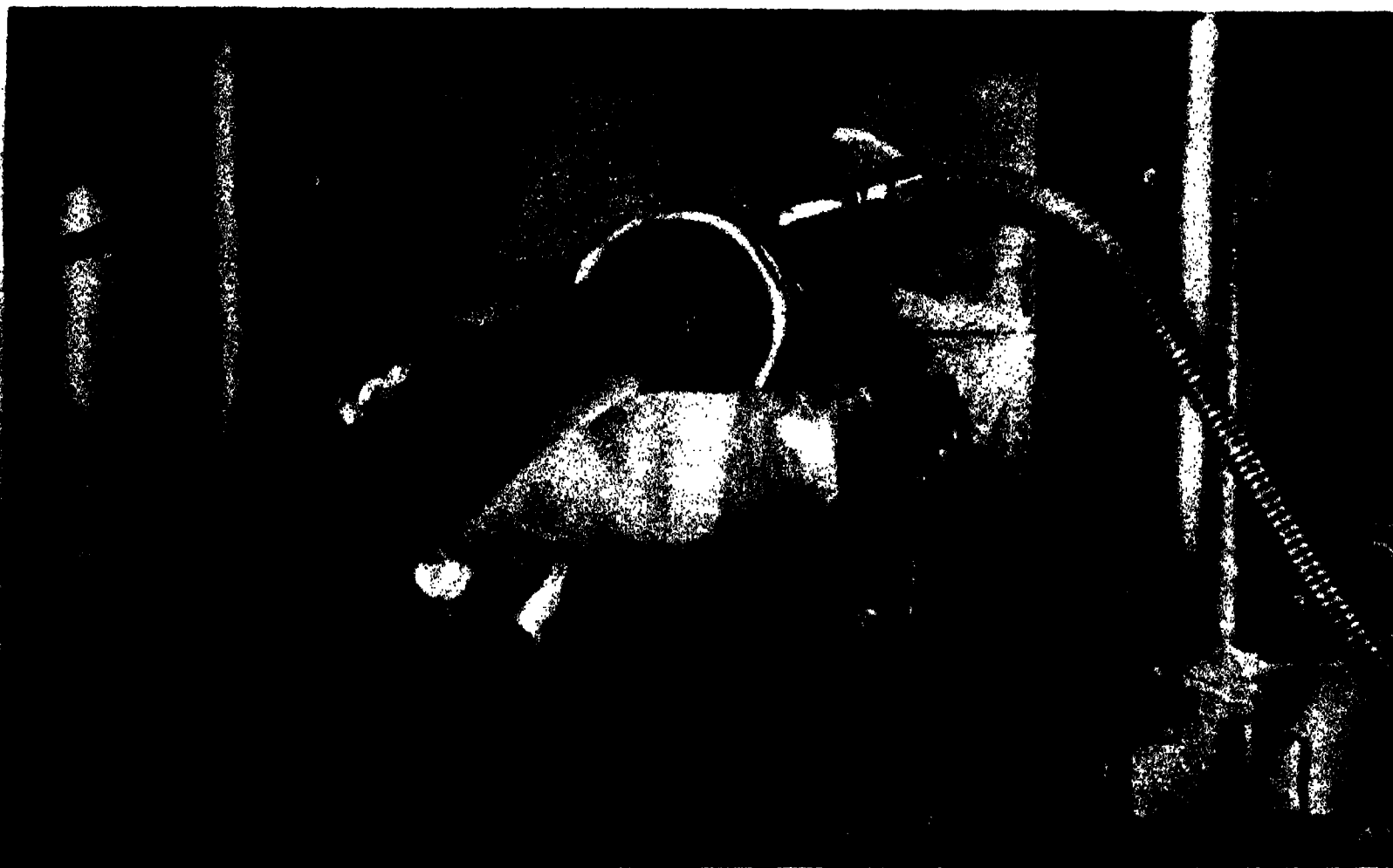
Submarine and electrical cables are made of more than one strand of wire. These drums of copper wire are circling round the shaft and revolve, paying out wire as they circle, thus twisting it neatly and symmetrically into a stout cable.



A CABLE SHEATHING "CANNON"

C.E.B.F.

The finished cable has to be coated with lead. This press, strangely like a piece of heavy artillery, does the sheathing.



A "CLOSE-UP" OF THE COMPLETED CABLE

C.E.B.F.

The sheathed cable emerging smoothly and efficiently from the press in its protective coat of lead, ready for use.



Wide World

LEARN AS A CHILD AND YOU LEARN FOR LIFE

The little Mexican Indian boy is being taught the rudiments of pottery painting by his mother. The designs and methods of painting vary with each individual tribe, and are handed down from generation to generation without any alteration.



Wide World

THE OLDEST INDUSTRY IN EXISTENCE

Pottery is, perhaps, the oldest industry and the potter's wheel is "half as old as time." But this Pueblo Indian is not even using a wheel to turn out her works of art. Her pot is placed on a small dish that can turn inside a larger one.

*Wide World*

HOW ALI BABA'S JARS WERE MADE

Even though this picture comes from Taschkent in Russia it is probable that the jars, where the forty thieves lay concealed, were made in the same way. Too heavy to turn on a wheel these huge pieces of pottery are laboriously built up by hand, using a wooden implement rather like a butter pater. Such jars are widely used in the East to keep water cool.



Doulton & Co.

**"THE POTTER, THUMPING HIS
WET CLAY"**

Like Omar Khayyam we can watch potters in England thumping their wet clay. This workman is "throwing the ball"—or moulding with his fingers the ball of clay.



Doulton & Co.

**AS PERFECTLY SHAPED AS A
GRECIAN URN**

Working carefully and skilfully the craftsman has caused his clay to take shape as a vase beneath his hands. At the last he moulds the lip, and it is quite ready for baking.



Doulton & Co.

TRANSFORMING A POT INTO A TEA-POT

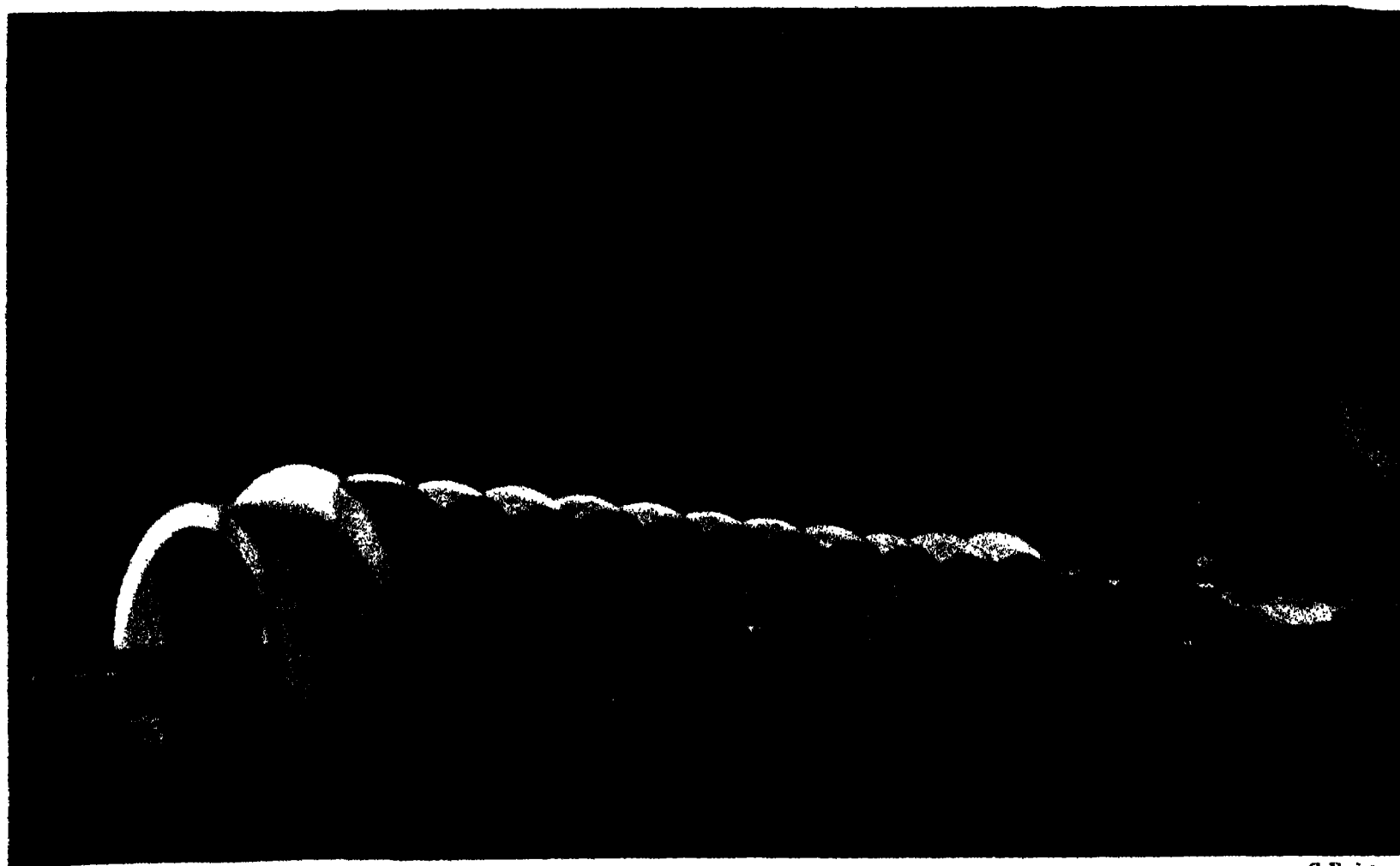
Spouts and handles are added after the body of a tea-pot has been made, but while the clay is still moist and pliable. This is a delicate business as can be seen by the expression on the workman's face! Machinery is increasingly used to-day.



Daily Herald

MECHANICAL PERFECTION IN POTTERY

The lathe is used in pottery where absolute precision is required. The picture shows a railway insulator being turned.



C. F. Smith

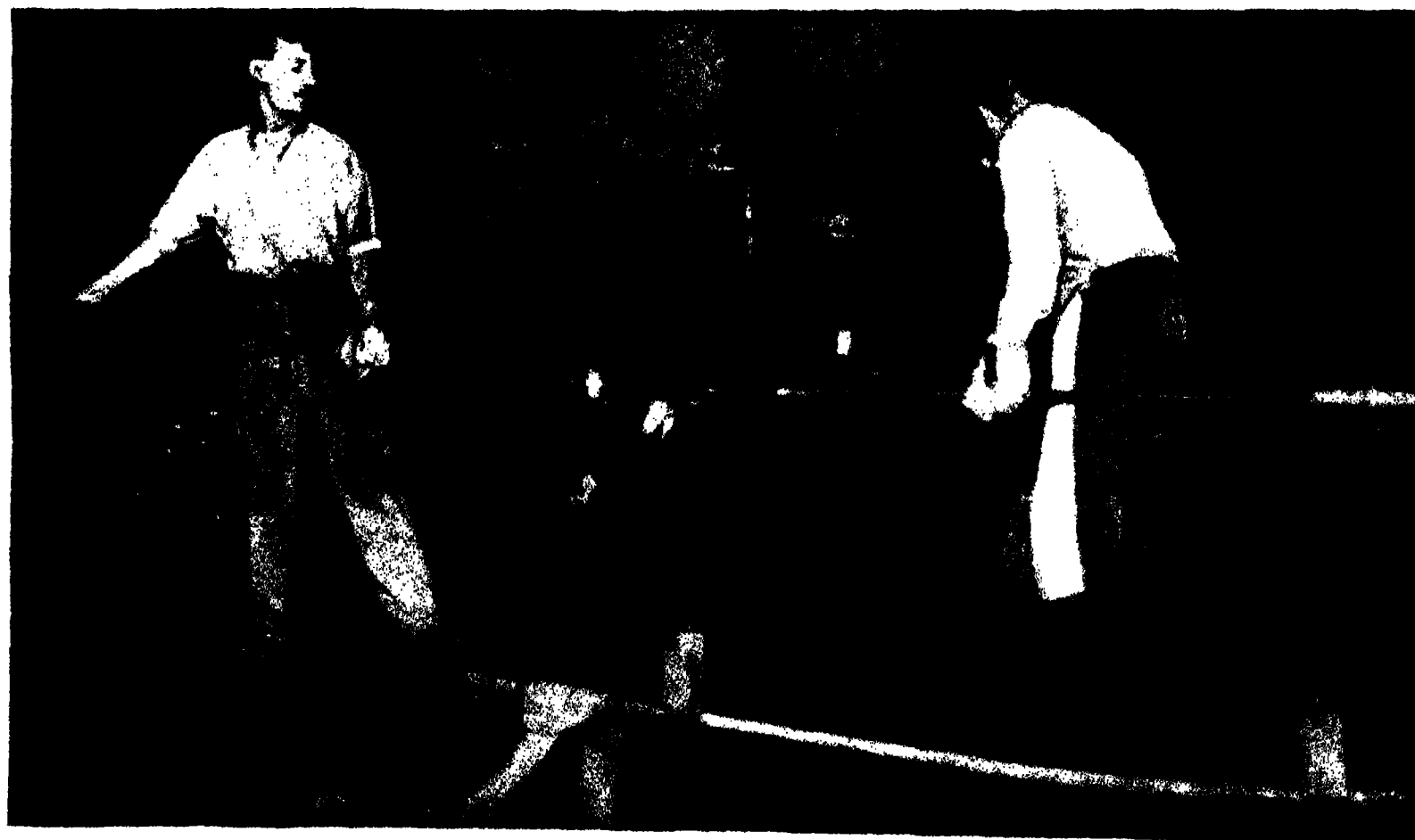
A GIANT INSULATOR IS GLAZED

This huge insulator, for a grid, is lowered into a bath of glaze before being fired to impart the "fin" sizes. Inset : The mechanical diamond cutter.



THE CLOISTERED DEPTHS OF A GREAT RESERVOIR

We turn on the tap, but do not give much thought how the water is filtered and supplied. Here is the interior of the Honor Oak underground reservoir, the largest of its kind in the world, before it was filled. On the roof is a sports ground.



AN ONION-SHAPED BUBBLE OF GLASS

Spouts and the making blown glass is one of the world's oldest crafts. A nob of molten glass is collected on a blow pipe is a delicate business. The pipe, which is rotated while pressure is applied by the other man to force it into an onion shape.



Chance

THE CRAFTSMAN'S MAGIC

The flattened bubble is inserted into the furnace again and spun, and as it spins it flattens out into a large thin disc. *Inset:* Modern methods of glass making are on a larger scale. Here is a strip of sheet glass emerging from the furnace into rollers.



Chance

WHIRLING THE DISC UNTIL IT HARDENS

This is taken out and spun again until it hardens. It is then ready for cutting into the desired shapes and sizes. *Inset :* The rollers flatten it into the desired thinness. This worker is cutting the rolled glass into sheets by a mechanical diamond cutter.



G.P.A.

Only by opening the shells can one tell whether there is a pearl inside. One will repay the labour of weeks.



THE PEARL FLEET IN ACTION

G.P.A.

Anchored over the "oyster" beds in the South Pacific, the Persian Gulf, the Gulf of Mexico, etc., the pearl schooners loiter under the tropical sun while divers explore the ocean bed in search of the shells containing their precious jewels.

WHAT MAN DIGS *from the* EARTH

MAN rifles the earth for its treasure. To carry on the tremendous requirements of modern industry he must have daily supplies of fuel in hundreds of thousands of tons and as great quantities of mineral ore from which he can extract the metals he can no longer do without. Industry rests upon mining, for the two most valuable fuels, coal and oil, and the most important mineral ore, iron ore, have to be wrested from the bowels of the earth, and if supplies of these raw materials were to run out, industry could not possibly be continued.

The Early Days of Coal Mining

England's industrial revolution began when men discovered that greater quantities of iron, of better quality, could be more economically smelted by coal, than by charcoal forges. The first man to discover this was a man known as Dudley, in the seventeenth century. He commenced to use coal—first transforming it into coke—in iron furnaces, instead of charcoal, and patented this new process. He made as much as three tons of good iron per week from each furnace. But like many other pioneers and inventors he was hounded down for his invention, which exasperated and frightened the charcoal burners and the charcoal smelters, and they brought false lawsuits against him to cripple him and had him wrongly imprisoned and did everything they could to break this new invention.

His successors who experimented in the same way met with much the same opposition, and it was not until the eighteenth century that coal began to be used widely for smelting iron. Then technical improvements followed fast and the new iron was vastly superior to the old as well as cheaper. Nothing could stop this industrial advance and by the nineteenth century England was leading the world. Whole districts were given up to the mining of coal. At first men had just extracted coal wherever it showed on the surface, digging shallow mines or quarries, but now they wished to tap its hidden reserves. They began to sink deeper mines and soon to bore to find out where the coal seams lay beneath the surface of the earth and to sink shafts down to the seams so that the coal could be mined. Men

dug, too, for iron ore, and blast furnaces grew side by side with pithead gear, and England came to be famous all over the world for her iron and steel goods.

Conditions in those early mines were appalling. Loss of life was great. Little children worked intolerably long, aching hours dragging tubs of coal along the tramlines in a choking atmosphere. They were harnessed to these tubs and crawled along on hands and knees in eternal blackness, like beasts of burden in the underworld.

Slowly conditions improved. Child labour was forbidden. Safety devices and proper government inspection made mines safer places to work in. Pit ponies replaced small boys, and now pit ponies themselves are being replaced by conveyor belts or electric haulage machines, just as the miner's pick is being replaced by mechanical coal-cutters. Nearly all modern mines are now mechanised, and some are electrified, so that the health and safety of the miners is much improved, though much yet remains to be done to improve the lot of these brave workers.

But the world owes a great debt to the men who have toiled these generations past in the bowels of the earth, digging out, in cramped and airless little pockets underground, the black gold by which industry might live for the benefit of all.

The Feverish Search for Precious Metals

Men have quarried and dug for other things than coal. Tin has been mined in England since before the Romans came, and this metal—precious to so many generations of men—has caused Cornwall to be scarred with deep workings every few miles or so. Mountains are blasted away for the sake of slate, and the slate quarries descend below ground to such depths that the men working at the bottom like look ants at the bottom of a well. Granite, marble, chalk, radium, asbestos—all these quarrying and mining industries occupy large populations in many corners of the earth. In search of the most precious metal of all—gold—men have slaved and starved and been frozen to death. Gold cities have been built in Africa, and the larger gold

WHAT MAN DIGS FROM THE EARTH

mines are themselves like underground cities, with broad galleries stretching miles, inhabited by a strange underground race, it might almost seem. Along these airy and electrically lit galleries little locomotives purr up and down all day, while every now and then will come the boom of some distant blasting operation at the rock face. The air is kept pure in these underground cities by pumping vast quantities of filtered air into them every minute.

Even those who live in the vicinity of collieries in England, which are not built on the labyrinthine scale of the larger goldmines, often have no idea of the maze of passages and galleries which thread the earth thousands of feet below them.

The value of petroleum has not been understood so long as the value of coal, but the oil reserves of the world are being used up more rapidly than the coal reserves. Oilfields have sprung up everywhere within the memory of living man—the great oilfields of North and South America, of Mosul, Persia and Russia and, as the old ones dry up, no doubt new ones will be discovered elsewhere to supply the want.

Striking Oil in Wildernesses

They present a strange and desolate picture, these oilfields. Often they are situated in barren, deserted country, and as far as the eye can see stretches a forest of wooden derricks, each derrick erected over an oil bearing. The oil comes from a lake of underground oil which is tapped by boring a shaft down to it. Pumps are then erected to lift the crude oil and to convey it to refineries where petrol, benzine, naphtha and paraffin are successively extracted. Sometimes the shaft may tap oil in which pockets of gas have been generated and the tremendous pressure of these gases will force the petroleum up the shaft in what is known as a gusher, which spouts thick black oil dozens of yards into the air, soaking everything for yards around with this inflammable substance. Such gushers frequently cannot be controlled—they have been known to lift heavy iron caps placed over them to keep them down high into the air—and much oil goes to waste while if a gusher catches fire, as only too often happens, then nothing can be

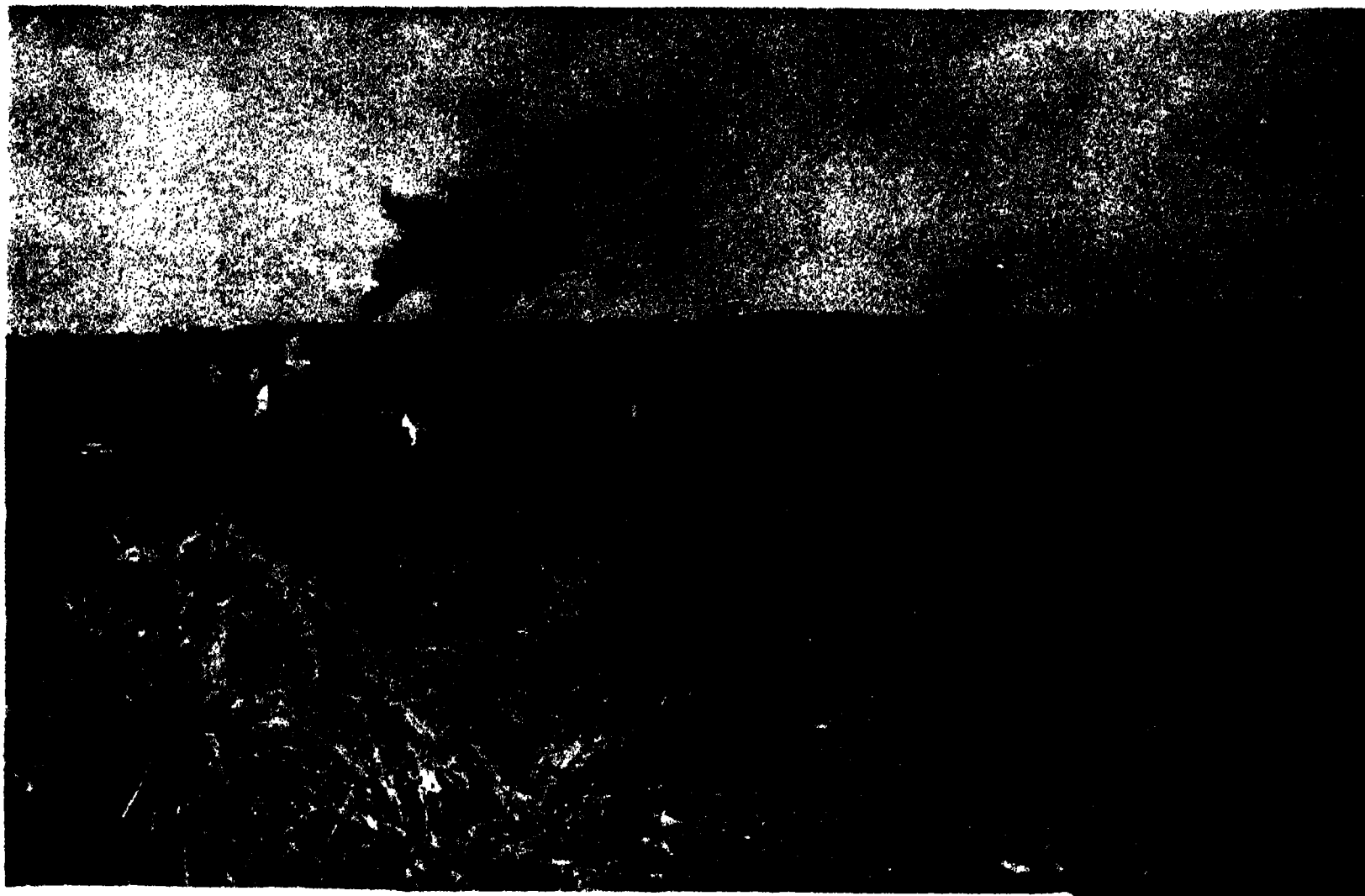
done to check it until it has died down of its own accord.

The mining of rock, mineral and fuel and the tapping of oil have been one of the greatest achievements of man and perhaps one might say, one of the greatest, though always risky, adventures. Because, only by the possession of these enormous treasures of the earth in huge quantities has the standard of modern life—its machines, industrial plants, motor-cars and aeroplanes, amusements and conveniences, and the overwhelming wealth of manufactured goods which flood the world's markets to-day—become possible. Industry and transport daily consume incredible quantities of fuel and these must be mined in ever-increasing quantities if commerce is not to come to a standstill. And despite depressions of trade, which hit basic industries like mining first, this remains true. Coal, iron ore and petroleum are vital to life to-day.

Some of the adventure, and a little of the danger, of mining and boring are shown in the pictures that follow, but not all, for pictures could never convey the backbreaking labour of mining, and the ever-present danger of firedamp explosion or roof falls, which few miners escape in the long run, or the burning heat in summer and freezing cold in winter, of slate or chalk quarries, or the dangers, the stink, the heat, the monotony of the life in oilfields the world over. Nor could pictures completely convey the ingenuity by which man has overcome so many of his difficulties—the machines which work for him, the power of compressed air or steam, of electricity and water which he utilises to release him from the burden of toil. But the pictures will convey something of the scope and importance of these key industries and the strenuous work of the men who toil in them.

It should always be remembered, however, that in judging the value of any mineral, all the circumstances should be taken into consideration. The glamour of gold, silver or platinum is not likely to prove very attractive to a man stranded on a desert island. In other words, the value of a metal lies not in itself but solely in the use which man can make of it.

LESLIE A. PAUL.



Courtesy, Colliery Guardian

EARTH'S BOUNTY—A COALFIELD IN A HARVESTING SETTING

A colliery is here shown against the foreground of a lovely harvest scene. This picture typifies man's two chief activities in the world's work—agriculture and industry, the latter depending for its fuel on mining and the gathering of minerals.



Courtesy, Colliery Guardian

MACHINES THAT DROP MEN DOWN INTO THE EARTH'S CRUST

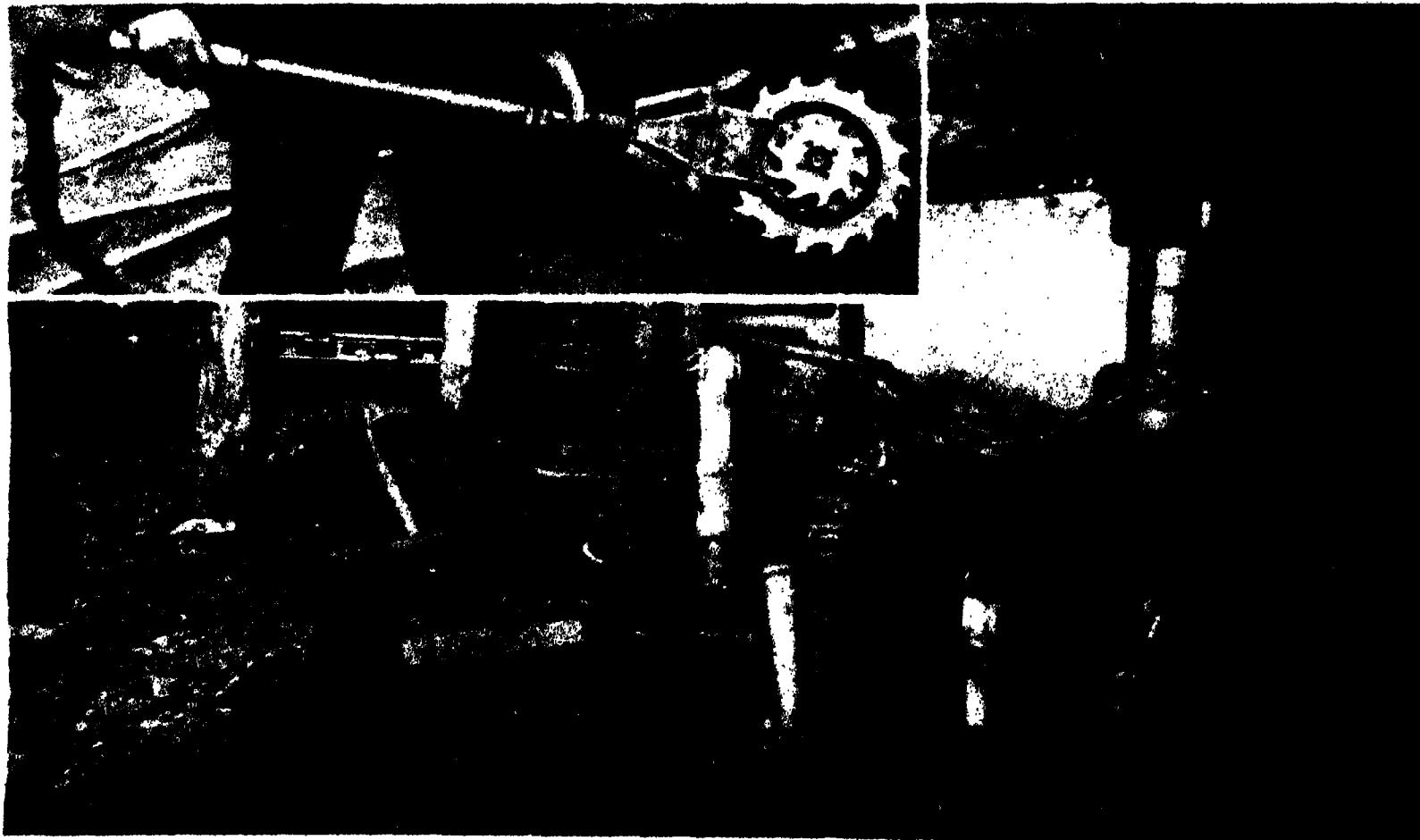
Three types of overhead winding gear at a colliery. These powerful machines drop heavy cages down the pitshaft at the rate of a thousand yards a minute and yet they bring them miraculously to a stop at the bottom without a jerk.



Topical Press

DIGGING OUT BLACK GOLD FOR FIRESIDE AND FACTORY

A miner is hewing coal with a pick at the coal face. Cramped and with little breathing space or elbow room, the miner certainly has our gratitude and admiration for his strenuous labour in hacking out the diamonds of industry. Note the safety lamp on the left, which was invented by Davey and is impervious to the dangerous gases which cause explosions.



Courtesy, Colliery Guardian

THE OLD ORDER CHANGETH—MACHINES REPLACE THE PICK

The pick is rapidly becoming out of date in modern mines and is being replaced by mechanical coal cutters and pneumatic picks. The device shown in this photograph is worked by compressed air and guided by the miner. This coal cutter, which is worked electrically, replaces manual labour almost entirely. It is working one and a half miles away from the bottom of pitshaft. *Inset*: A close-up of a mechanical cutter showing the circular teeth which cut into the seams.



Central Press

"LITTLE BLIND PIT PONIES" ARE VANISHING FROM THE MODERN MINE

Here a pit pony is seen drawing tubs of coal, its young driver sitting on the shafts. Only a generation or two ago boys and girls were harnessed to these tubs and drew them—often by crawling on hands and knees—through long dark passages underground. Now the pit pony itself is being superseded by mechanical conveyors. Steel props are now displacing wooden.



Topical Press

GOING DOWN!—INTO THE BOWELS OF THE EARTH

A group of British miners in a cage ready to descend the pit shaft and to trudge to the coal face—which may be a couple of miles from the bottom—for their day's work. The inside of a coal mine is a perfect labyrinth of galleries and tunnels.



Courtesy, Dorman Long & Co., Ltd.

IRON ORE IN THE RAW

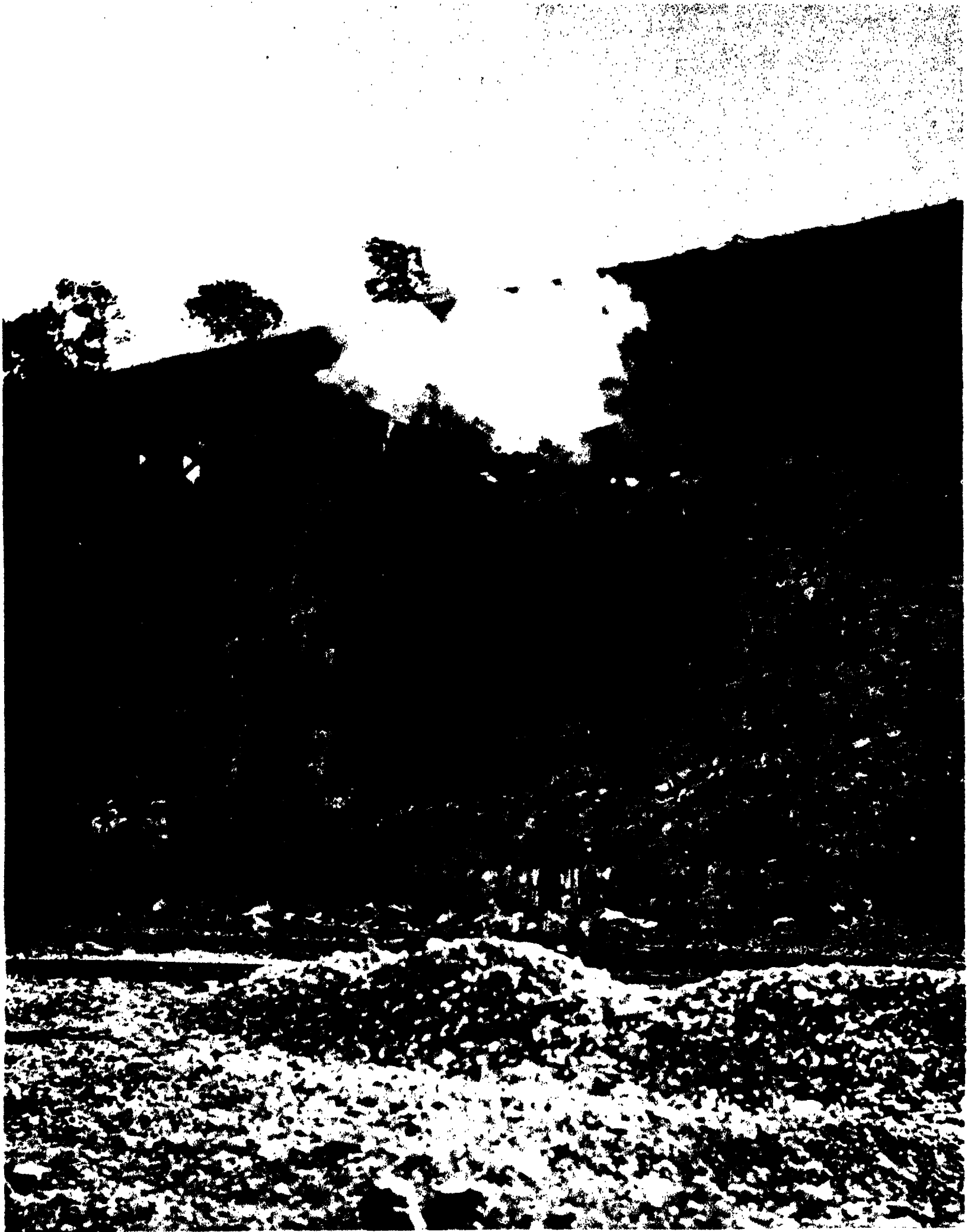
Here miners are seen working on an iron ore seam. There is no danger of firedamp in this mine and the naked flames of their candles can be seen clearly on the rock face. Also, the miners are not forced to work in such cramped positions.



Courtesy, Assed. Portland Cement Mfrs., Ltd.

QUARRYING CHALK FOR CEMENT

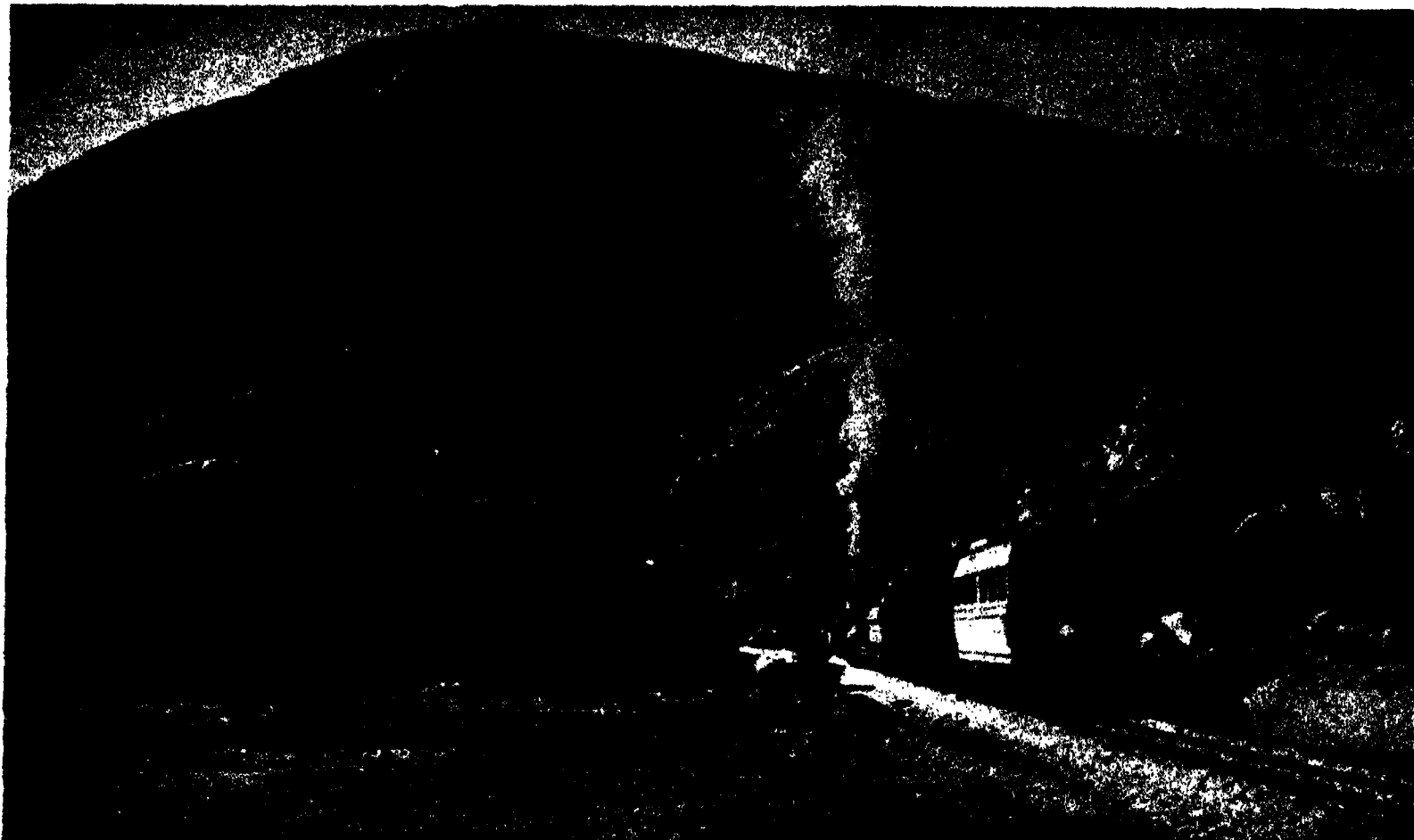
And now we catch a glimpse of the quarrying of chalk on the Downs for cement making. Two huge steam navvies are here at work. The size of the quarry can be judged by the man high up on its face on the left. Trucks carry the chalk away.



Courtesy, Dorman Long & Co., Ltd.

A FOUR HUNDRED AND FIFTY TON BLAST

Blasting is in progress in a limestone quarry. You may not believe it, but 450 tons of rock are falling down. Limestone is used for building and as a flux in the smelting of iron ore to make iron and steel. The charge is fired by electricity.



Courtesy, Anglo Persian Oil Co.

EN ROUTE FOR THE OIL FIELDS

The chief oil fields of the world are in North and South America, Persia, and Russia. This time we have a Persian scene in the valley of the Tembi. An Anglo-Persian Oil Company's train is making for the oil fields with supplies for the workers.



Courtesy, Society for Cultural Relations

A WILDERNESS OF DERRICKS IN A RUSSIAN OIL FIELD

Oil is struck by boring a shaft down to it, and it is then pumped to the surface. Above is a view of an oilfield at Balen in Russia—with a desolate, but impressive scaffolding of derricks. The oil has to be refined before it is ready for use.



Courtesy, Asiatic Petroleum Company

NO POWER CAN QUELL THIS FIRE

A Californian oilfield on fire. The sight of these flames and smoke licking the sky might well strike one with terror. For when an oil gusher catches fire, it is impossible to put out and a fire like this may rage for weeks, causing immense damage.



THE LIGHT AND SHADE OF SHALE

Courtesy, Shell-Mex, Ltd.

As we have seen, oil is usually obtained by boring into underground lakes of oil. But rock—oil shale—containing a high percentage of oil is also mined. Here is a tub of shale coming to the surface of a mine at West Calder, in Scotland.



Courtesy, Imperial Chemical Industries

AN ELECTRICAL UNDERGROUND RAILWAY INSIDE A MINE

This is an electric locomotive hauling trucks of mineral in a mine, but it is not a coal mine, where electrical devices cannot always be used, lest they cause sparks which might explode "firedamp," a form of marsh gas which is the miner's worst enemy. The mineral being hauled is gypsum, which is essential to the chemical industry for conversion into plaster of Paris.



Courtesy, Canadian Pacific Railway

THE MINERAL THAT WILL NOT BURN

Asbestos, the fireproof mineral, is a naturally valuable product and is found in Canada and South Africa. Asbestos is used in the manufacture of fireproof fabrics, ropes, paint, etc. Here workers are shown drilling in an asbestos quarry.

MINING



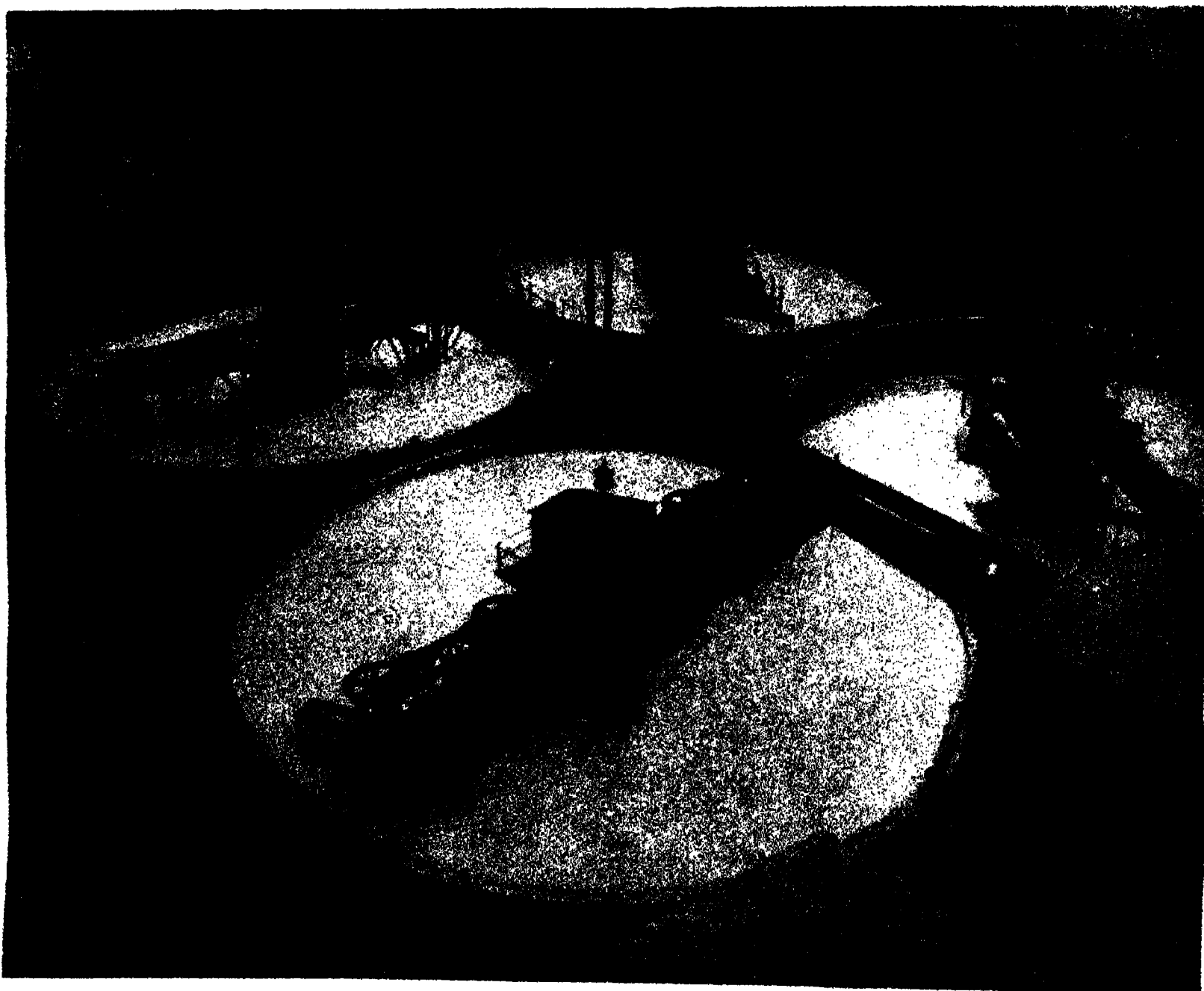
GRANITE AND CEMENT



Courtesy, Quarry and Roadmaking

MIGHTY SLABS OF GRANITE TAKE SHAPE

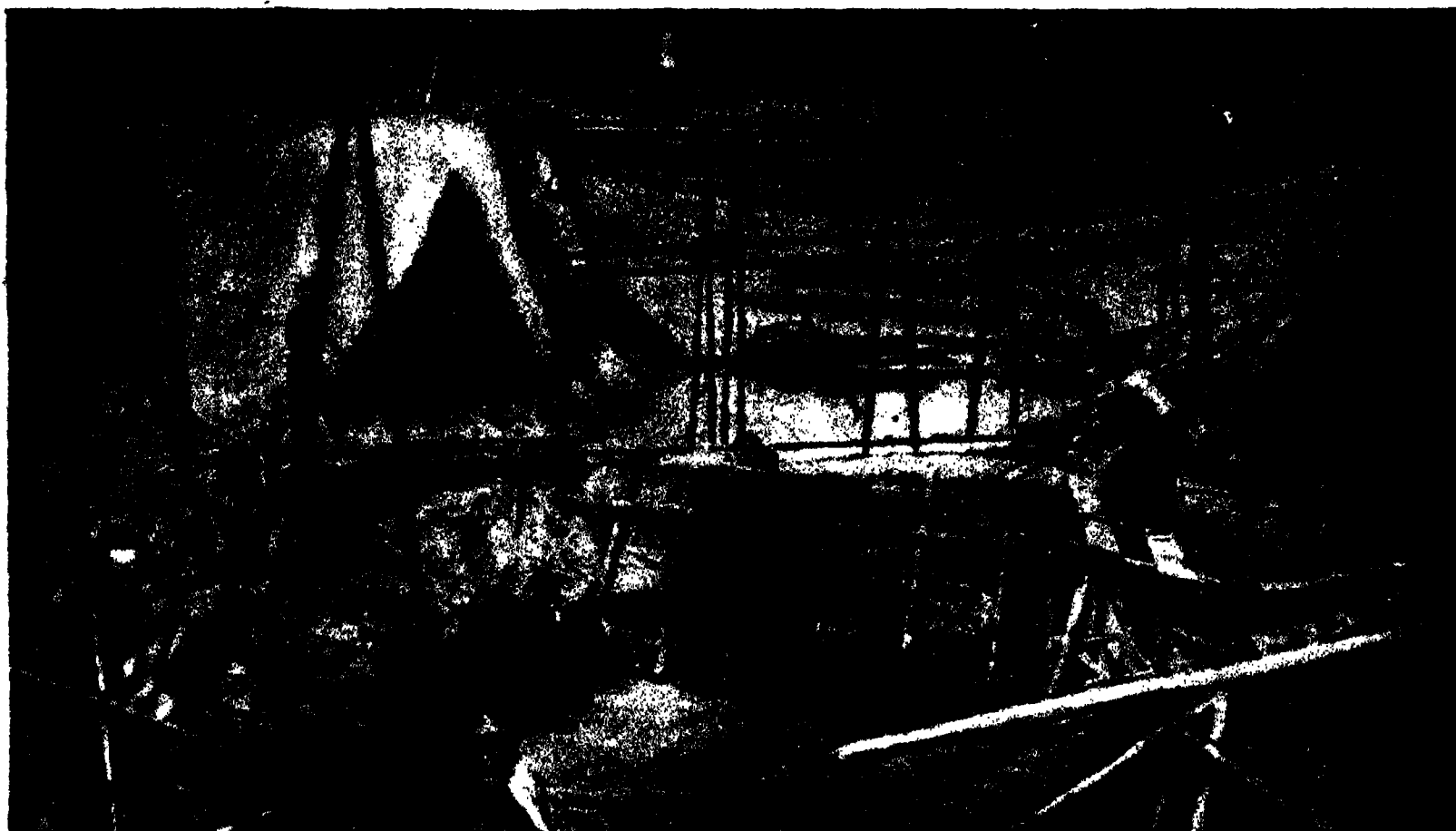
Granite is one of the most durable building materials. In the picture on the left workmen are seen rough finishing a granite block by hand. On the right a special machine is finishing off a massive granite block, destined to adorn some monument.



Courtesy, Assoc. Portland Cement Mfrs., Ltd.

THE WHITE LAKES OF CEMENT LAND

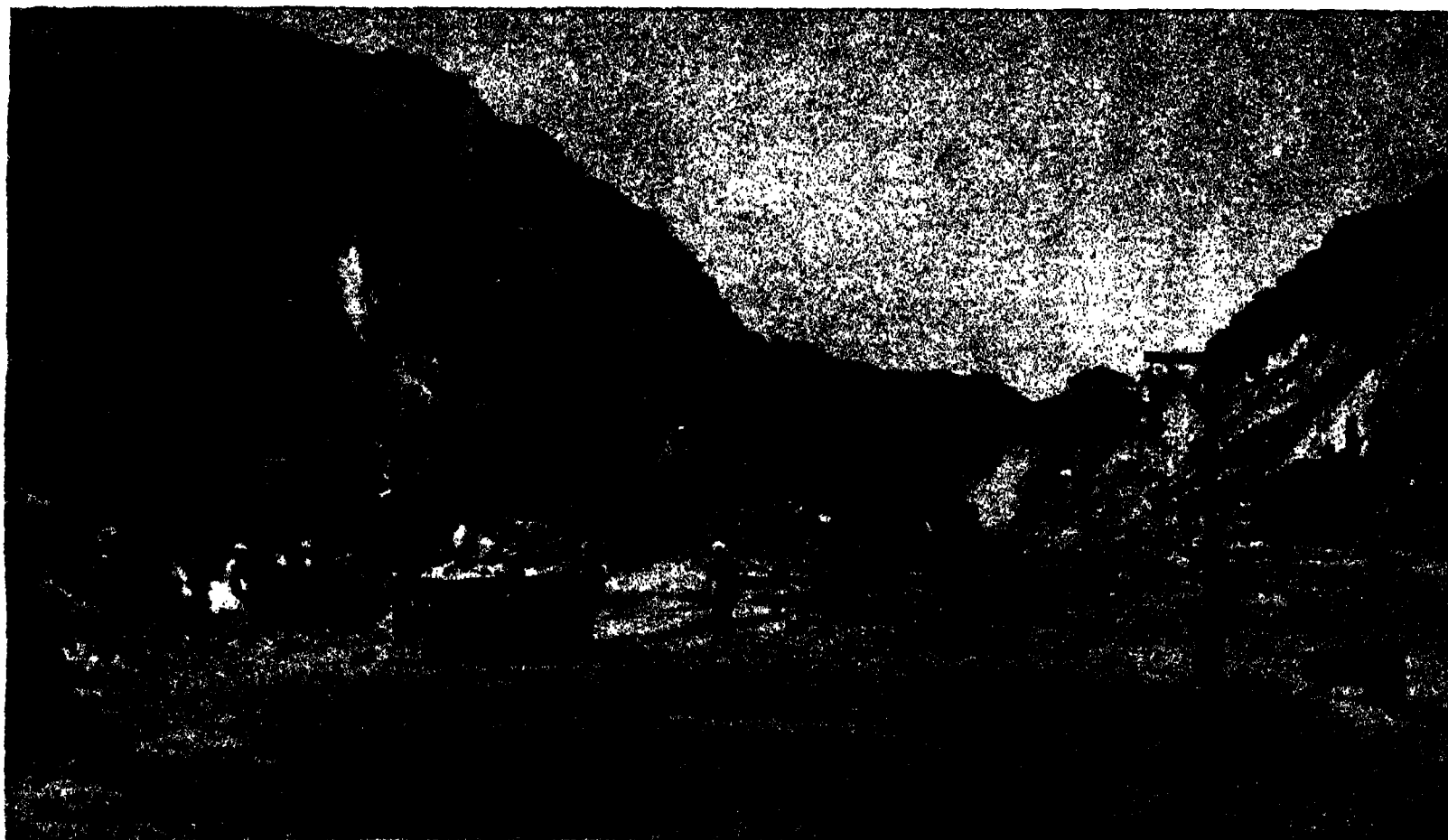
Finely ground chalk and clay are being mixed in these huge tanks to make cement. The mixture is turned and ground in huge rotating kilns, the chalk being converted into lime. Cement is, of course, used in making concrete for building.



Courtesy, Malayan Information Agency

WHERE TIN COMES FROM—A WORKING IN MALAYA

Tin is an important metal, being used as an alloy with bronze and as a covering for iron. In the above picture labourers are shown at a tin working in Malaya. For the most part they continue to wash the tin out of the soil by age-old methods.



Courtesy, Malayan Information Agency

MODERN METHODS ARRIVE IN MALAYA

This picture shows by way of contrast a modern tin working in Malaya, electrically lit. The world's principal tin mines are to be found in Malaya, China, the Dutch East Indies and Nigeria. In the days of the Roman Empire tin was the most important produce of the British Isles and merchants came from afar to exchange their wares with the Britons.



Courtesy, Transvaal Chamber of Mines

THE NATIVES OF THE RAND KEEP ON THE GOLD STANDARD

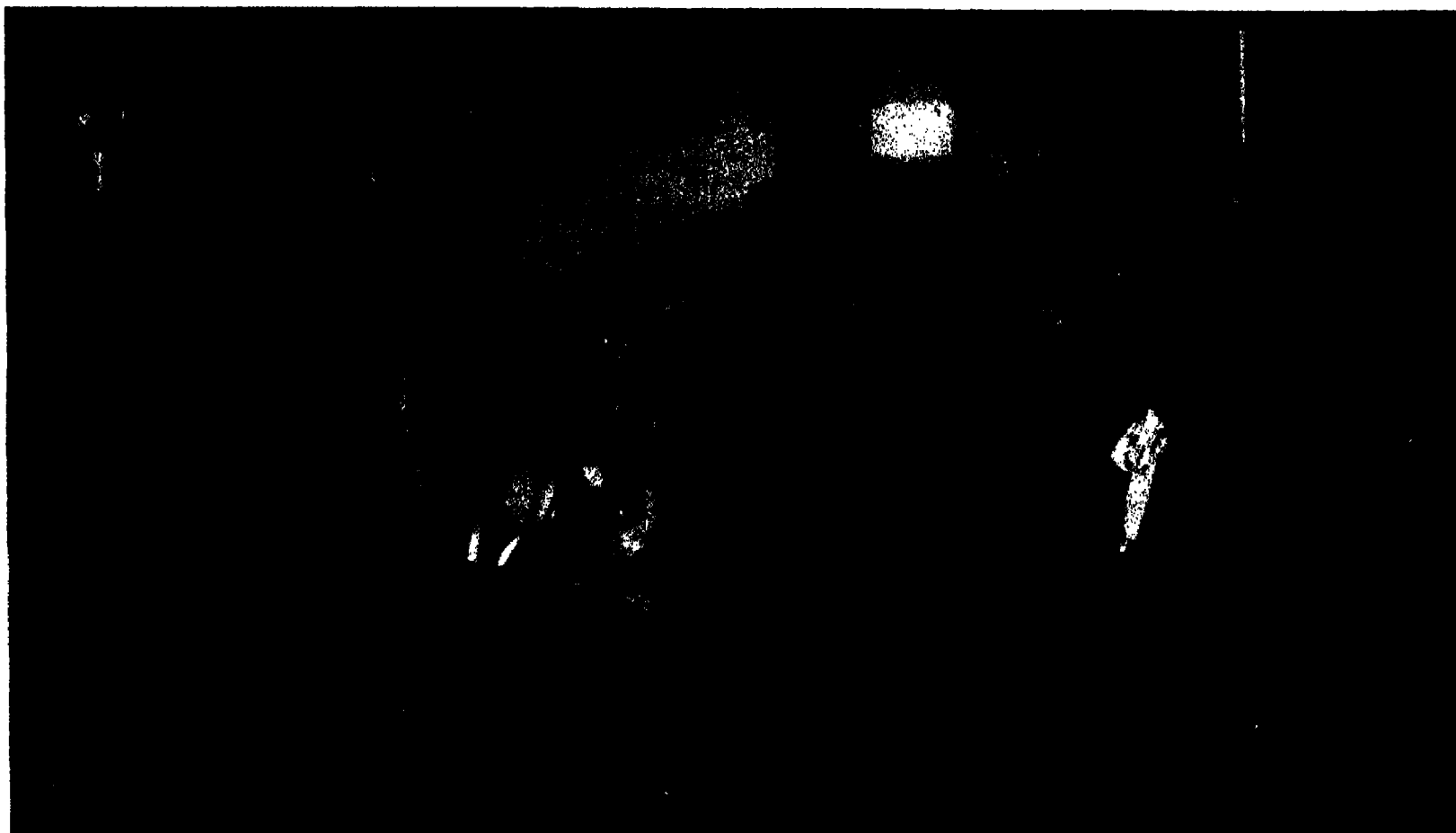
We now come to the mining of gold—the world's most precious metal—in the Rand Goldfields, South Africa. A native miner is here drilling the ore face so that a blasting charge may be inserted and fired electrically from outside the mine.



Courtesy, Transvaal Chamber of Mines

NATIVES SORTING THE PRECIOUS ORE

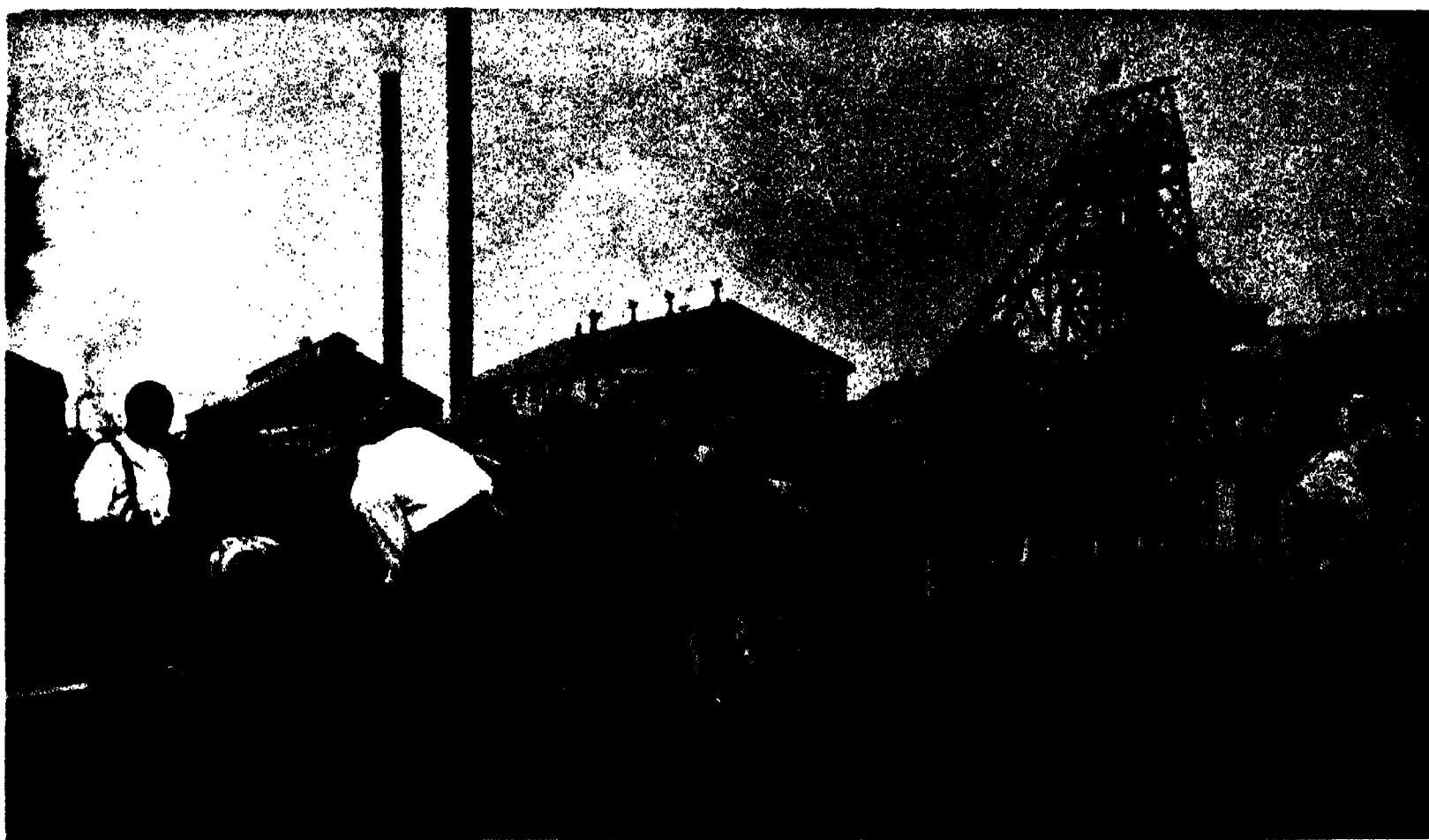
The ore is first pounded by a battery of crushers, and the pulp is specially treated by water and mercury. Layers of amalgamated copper plates over which it is passed arrest the small amount of gold, leaving the unwanted pulp to run off.



Courtesy, Transvaal Chamber of Mines

THE FINAL STAGE BEFORE THE BANKERS GET IT

After the ore has been sorted, it is refined by heating into a molten state. The molten refined gold is then ladled into ingot moulds in which it will set. This is the last stage in gold making, and soon it will reach the mint to be made into money.



Courtesy, Transvaal Chamber of Mines

NATIVE FIRST AID ON A GOLD MINE

On leaving their work native miners undergo an examination for cuts and bruises. Just as industrial cities have attracted workers from the outlying country, so the natives of the Transvaal and beyond have flocked to the rich Rand goldfields.



Courtesy, Quarry & Roadmaking

THE FIRST STEPS TO A GRAVEL PATH

Gravel is quarried for building and roadmaking. This mechanical device travels along rails and as it goes scoops up gravel, which it carries by an endless chain of buckets and empties into the tip trucks waiting alongside. It displaces much labour.



Courtesy, Quarry & Roadmaking

QUARRYING SLATE FOR OUR ROOFS

Hillsides are hewn away for the sake of slate, a kind of shale rock, which is split into thin sheets and used largely as roofing for our homes. This picture shows a worker making slates in North Wales, where many of the best quarries are found.

THE HARNESSING OF POWER

MODERN civilisation has its basis in power—machine-power. A host of mechanical contrivances worked, not by the puny power of men's muscles, but by the explosive power of petrol or gases, or by heat generated by coal, oil, peat, coke and other fuels, perform for mankind the intricate and delicate operations by which the extraordinarily complicated industrial, commercial, and domestic processes are undertaken for us.

In every home in an industrial neighbourhood power is on tap: electricity or gas for lighting, heating and cooking and even, in the telephones, for communication. Even simple homes in non-industrial areas can be provided with power by the widespread and growing network of the "grid" (the system of co-ordinating and distributing electric power) in England to-day. And coal, oil, and wood fuels are still indispensable to-day to provide heat and power for daily domestic tasks.

Yet the first source of power is man's own energy, his muscular power by which all the marvellous later developments of industry have become available to society. Yet because this source of power is relatively feeble man has always searched for other sources to supplement his own. He cannot create energy, not yet build machines to create energy. Machines may utilise energy already created and possibly locked in some substance or other, or convert one form of energy into another of more direct service to man, but created it cannot be. All man's new-found power consists of the conversion or unlocking of energy, which nature has provided in abundance.

Power from the Elements— Wind and Water

Man converted to his service long ago the energy of wind and water. A boat can be rowed or paddled—the first boats were—but man found it easier and swifter to erect a sail to trap the power running freely in the wind. Wind-driven grain ships still sail from Australia to England, though they grow fewer every year, so that despite man's vast new sources of power he does not easily relinquish the use of the old ones. The wind is still utilised to drive the sails of windmills and to grind the corn, and water is still pumped from wells by wind-driven pumps, for these form an economical power source. One form of power is not abandoned for another, however much better, unless it is at the same time more economical. This is the acid test for all inventions.

The textile factories on which England's greatness in commerce was first built drove their

power looms by the fast-running streams from the Pennines: the water-driven cornmill is still a familiar sight in the countryside. Wind and water were man's first servants, enabling him to accomplish, despite his slight physique, labours beyond the possibility of much stronger animals. Indeed, he used his wit to tame and domesticate stronger animals for the sake, partly, of their muscular power, and horses, bullocks, camels, yaks, water-buffaloes, reindeer, dogs and elephants still perform much of the world's work for us in places where modern sources of power are inaccessible or rare and costly. Even in the most highly developed industrial areas, where the slowness of the horse hampers rapid movement, we have not yet learnt to dispense with its services altogether, for, for certain work, it is cheaper than motor traction. Horses daily pull loads over miles of English streets and many tubs of coal are hauled every hour of the day from coal-face to pit shaft in English mines by pit ponies.

The Power of Steam

Yet the modern sources of power far exceed in energy-production the simple contrivances by which man has harnessed the power of wind and water for centuries past. The steam engine and internal combustion engine have revolutionised industry and transport. By burning coal man releases its energy and makes it perform useful services for him. Coal, of course, is fossilised vegetation—vegetation which grew under hot suns thousands of years ago and absorbed solar energy and rotted and was compressed by the weight of the earth. This, when burnt, yields far greater heat than wood or charcoal. By its heat water is converted into steam, which produces tremendous pressure, or power, which can be directed as man desired—to the lifting of huge volumes of water, to driving engines over roads of steel tracks—in fact, for nearly any activity man might need. The internal combustion engine, which has revolutionised transport in the last generation, utilises the explosive power of petrol in a light and convenient engine, and so accomplishes what earlier generations would have regarded as miracles—machines which travel along the ground or fly through the air at speeds which earlier generations could not have imagined, and which are not yet final speeds. For on race track, or in the air, intrepid airmen and motorists are forever striving to add just one more mile to the existing records. Such efforts are often decried by certain people as being useless in themselves and as amounting to nothing but ostentatious display of sensationalism; but it

THE HARNESSING OF POWER

is only by such means that the full power of engines of all descriptions can be really tested, and subsequent improvements made as defects appear.

Electrical Energy Revolutionises Daily Life

To these sources of power we must add electrical energy which, with every year, is becoming more accessible and less dispensable to millions of homes. Man does not now bother to tap rivers and streams for the production of crude power which will turn mill wheels or drive power looms. He canalises and directs the fall of water at its greatest or most useful point, forcing it to turn huge turbines and so generate electricity which cables distribute widely over the surrounding countryside, lighting cities and providing them with power, working huge plants—which thus have no need to generate power for themselves—and so saving natural resources and labour power. The Niagara Falls, The Shannon, the Volga and Dnieper, the torrents of Switzerland, and rivers large and small the world over, have had their energy harnessed to perform work for man.

Or, if water power is not available, man burns his fuel at some central station to effect the maximum production of electrical power which can then be distributed widely. This saves enormously the consumption of fuel, for it replaces the open fires of many homes, the furnaces of countless factories, by a central consuming station which achieves a maximum of power production and a minimum consumption of fuel. England, belatedly, for she has always had a plentiful supply of coal ready to hand for fuel and power, is now witnessing an electrical revolution.

The "grid" system, by linking up the power-producing plants of the country, is making the generation and supply of electricity a cheap and practical affair. How swiftly this revolution is proceeding will be understood when it is remembered that in England in 1926 there were only two million wired houses, while to-day there are over five million: again, in 1921 there were only 70,000 electrified factories; to-day there are more than 120,000. England of the industrial revolution scarred the country with black dumps, belching chimneys and vast areas of mean and sordid dwellings, from which sun and air were shut out. The electrical revolution is making it possible for the grim and dirty relics of the birth of industry to be abandoned, and for industrial areas to be cleaned and garnished. There will soon no longer be any need for a million belching chimneys. One power station can consume all the fuel of those chimneys and consume its own smoke, too. The gain to health

and beauty of electrification of the countryside cannot be over-estimated.

What has been the effect of tapping these new sources of energy for man? It is marked very clearly in the changing character of life to-day, for, at every point, we utilise power for convenience, health or profit. Trains, trams, buses, and cars carry us from place to place; electric light and gas standards light our paths; our amusements are dependent on our power to turn night into day; the most popular entertainment, the cinema, wholly depends upon power; our huge buildings, electrically lit and fed with filtered and conditioned air make it possible for work to be carried on under pleasant and equable conditions day and night, winter and summer. Industrial plants of the size we are accustomed to would be impossible, but for the enormous resources of modern power.

Even more marked is the increased productivity of labour as a result of power application. In the U.S.A., the most highly industrialised country in the world, the producing capacity of the individual worker is thirty times as great as that of the labourer in China, who depends chiefly on his own muscles. It does not mean that the U.S.A. labourer is thirty times as strong, but that the machine power at his disposal enables him to turn out thirty times the quantity of goods which a Chinese labourer could produce in the same period. And since real wealth is not gold, but our capacity to produce goods for consumption, the potential, if not the actual, wealth of U.S.A., or of its citizens, is thirty times as great as that of the scattered population of China.

Tapping New Sources of Energy in the Future

By the development of power resources this productivity is bound to increase and it is, tragically, for it need not be, a cause of unemployment to-day. For, to take one example, a steam shovel can now do the work of 200 unskilled labourers. But in the long run, if mankind is wise, power should enable us to ease the burden of labour or mankind and to solve the problems of scarcity and unemployment, for the power-driven machine can be made the new slave of man.

Though we are using up our fuel resources, they will last for many thousands of years yet, and new sources of power will be discovered. Even now experiments are being made with the atom, with superheated steam, with plants to convert coal into oil, hydrogenation, and new machines may yet enable us to tap the power of the sun. We may look forward to the future confident that science has many surprises in store for mankind in its progressive battle for control of natural things.

LESLIE A. PAUL.

POWER



Courtesy, Central Electricity Board Films

MAN POWER—THE ENERGY WHICH HAS CREATED THIS AGE OF MACHINES

Man's own energy is his first source of power, which he has marvellously supplemented by many inventions. His delicate framework, the relatively feeble strength of his muscles, has unlocked undreamt of power. This workman is engaged in erecting an electric pylon, each nut and bolt in which is inserted by hand power assisted by a hand wielded instrument.



Courtesy, Imperial Chemical Industries

HORSE POWER—THE HUMAN STANDARD UNIT FOR MEASURING THE POWER OF MACHINES

Three horses pull a reaper on a downland farm, while a man stacks the sheaves. Horse power has become the unit for measuring the power of engines; the power of a horse being reckoned as power to raise 33,000 lb. one foot per minute.



Courtesy, Society for Cultural Relations

HARNESSING WATER TO OBTAIN POWER

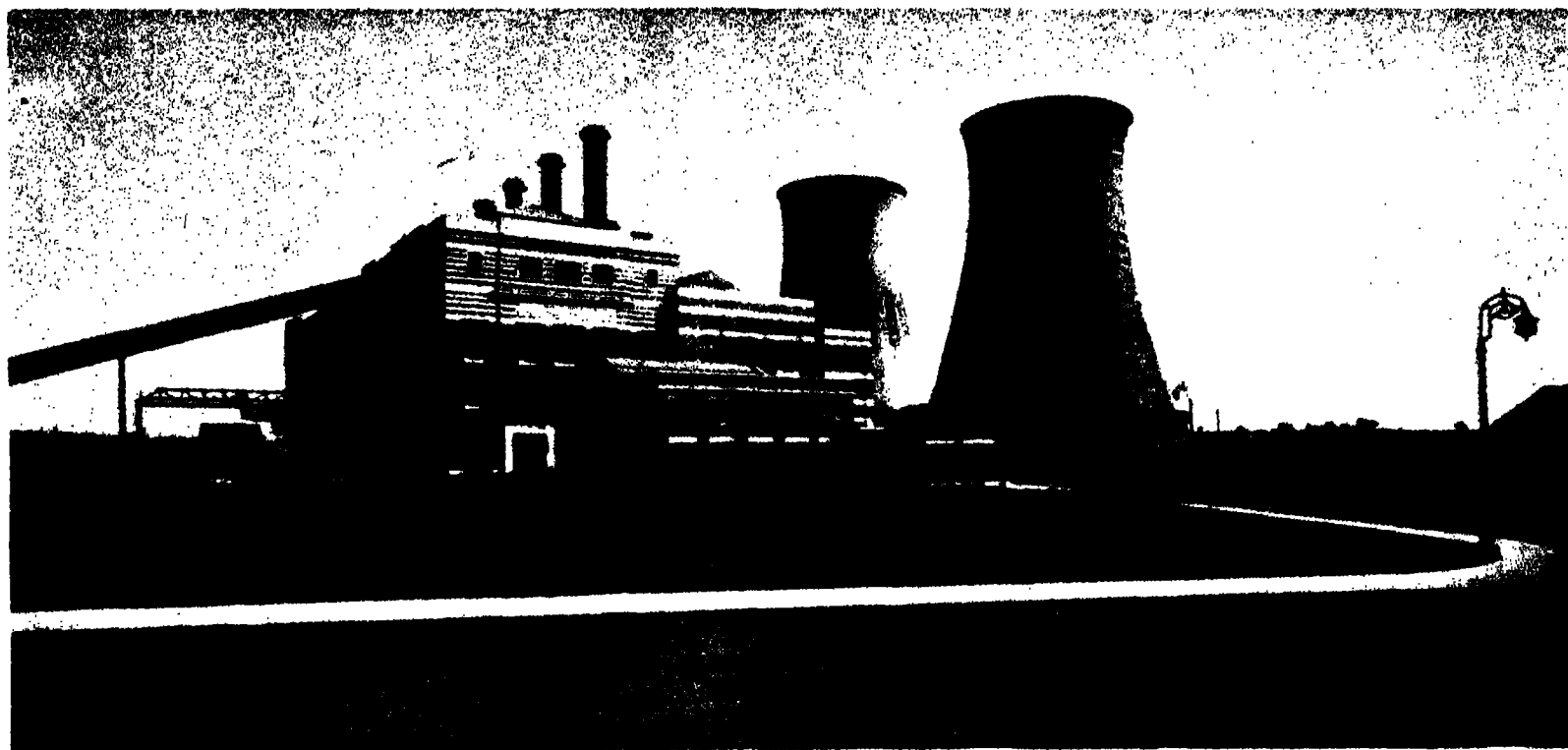
Man has used water to drive his mills for centuries, driving it into narrow canals and slipways and directing the powerful rush thus produced on the blades of the wheels he wants turned. This is the principal of hydro-electric power. The largest station, which is on the River Dnieper in Russia, generates enough to work twelve factories and to supply two towns.



Courtesy, Society for Cultural Relations

SOVIET SENTRIES STAND GUARD OVER POWERFUL DYNAMOS

The dynamo converts mechanical into statical energy. Here we see the dynamos in a power plant in Russia. Electrification schemes on a grand scale have been a big feature of the industrial side of the Soviet's policy in its "Five Year Plans."



Courtesy, Central Electricity Board Films

WHERE THE SAME STEAM IS USED MANY TIMES

This is the Harris Hall Generating Station at Birmingham, showing the large cooling towers. After the steam has emerged from the condensers it is cooled in these towers and then pumped back into the boilers to do its work over and over again.



Courtesy, Central Electricity Board Films

THE POWER THAT LIGHTS THE MYRIAD LAMPS OF LONDON

Above we see a turbo-generator at Battersea Power Station. The blades of the turbine are propelled by steam and generate enormous power to light the interiors of homes and work the power plants of the factories of London's southern area.



Courtesy, Central Electricity Board Films

OVER HILL AND DALE THE STARK PYLONS CARRY ELECTRIC CABLES

The grid—which is a national network of power cables linking power plants and so ensuring an equal distribution of power all over the country—is transforming England. Here are seen tall crossing towers over the Ribble, linking up the system.



Courtesy, Central Electricity Board Films

A PLANT FOR CLEANING SMOKE

So much fuel is consumed that the smoke would affect the health of the inhabitants of the crowded area around if it were not purged of its dangerous chemicals in a smoke cleaning plant. Someday smokeless fuel may be compulsory.



Courtesy, British Commercial Gas Association

FLOODLIGHTING EXETER CATHEDRAL BY GASLIGHT

Coal gas provides power for industry as well as homes. For instance, it may be used in transport, since motors can now be charged with compressed gas. Above is shown another example of the use of gas—the floodlighting of a cathedral.

THE MACHINERY OF BUSINESS

OLD Fra Burgo, strolling in the Piazza San Marco in the middle of the fourteenth century, carried in his pocket the manuscript of a new book, the like of which had never been seen before. Truth to tell, it was a treatise on "The Art of Book-keeping by Double Entry," written and invented, we may be sure, for the especial behoof of the renowned merchants of Venice. But old Fra Burgo "wrought greater than he knew," for the principles enunciated in his little book were destined to become, and to remain, the foundation of book-keeping in every counting-house throughout the world.

It is all very well to say, as political economists do, that the essentials of commerce are production, distribution, and consumption; we must have, in addition, organisation and accountancy, and it was our shrewd Italian who reduced the latter to a really scientific system.

Accountancy Through the Ages

There were methods of keeping accounts even among the ancients. The Babylonians recorded their business transactions on bricks and tiles which are still to be seen in our museums; Egyptian and Phœnician had each his papyrus and vellum scrolls; the Greeks and Romans drew bills on one another much as we do to-day, and did we not in our own country record Exchequer payments by means of tallies, which were nothing more nor less than sticks embellished with notches instead of figures?

In the great religious houses of medieval Europe, the bursar was busy with mundane rents, crops, buildings, and wages—all meticulously entered in the monastery's books—whilst his more exalted brethren laboured at their missals; goods were distributed in the open market-place and by means of fairs, and out of the feudal age gradually emerged the great trade organisations, such as the Hanseatic League, and the Italian Republics which flourished and ruled the world of commerce without old Fra Burgo's assistance!

But in 1453 the Turks took Constantinople, and the great caravans that brought spices and silks from the East to the warehouses of Venice and her sister states, were held up by the infidel. At that period, scurvy and leprosy were rife in Europe in consequence of the scarcity of vegetables, and it was only by the use of spice that the evils arising from an excessive consumption of flesh-foods were mitigated. It was imperative to procure spice at all costs, but the road to India was effectually barred. Vasco da Gama, in search of another route, rounded the Cape of Good Hope, but, more momentous still was the voyage of Columbus, who, declaring

that there was another way to India by sailing westward round the globe, discovered America! Incidentally, he ruined Venice and the Italian republics, for the centre of gravity so far as trade was concerned was removed from the Mediterranean to the Atlantic, to the advantage of Spain, Portugal, Holland, France, and Great Britain.

Thus 1453 is probably the most important date in human history, and, what is more, we acquired as a further result of the fall of Constantinople, a new learning, including the science of algebra, which gave to mathematics a new orientation and to Fra Burgo a new idea.

The exploitation of the "New World," particularly by the planting of colonies, opened a new era in the history of commerce, and was bound to lead, sooner or later, to an improved machinery of business to cope with fresh and complicated ramifications.

At first, the tradesman and the merchant were slow to change their ideas of office management. The earliest English treatise on book-keeping (by John Gowghie) was published in 1543, and, at the close of another three hundred years, Dickens, describing with inimitable accuracy the activities of two typical firms, Cheeryble Brothers and Dombey & Son, leaves us in no doubt as to the patriarchal and almost lethargic routine of a London business "house" in the early years of Queen Victoria's reign.

The Offices of the Machine Age

But stupendous changes were at hand. The same reign saw the inauguration of the "Machine Age." Steam, electricity, the telegraph, the telephone, the motor-car, the flying machine, lifts, internal heating, and the wireless have come, one after the other, to annihilate time and space. Great liners plough every sea, and express trains traverse every continent. Henceforth, speed was to be a new factor in the international fight for the markets of the world.

Joint stock trading and limited liability heralded the formation of companies with vast capitals; the compulsory delivery of accounts to the Board of Trade, as required by law, tightened up commercial book-keeping, and brought a new race of professional men, the auditors and chartered accountants, into the business world. Palatial buildings to house the boards of directors and large staffs of workers were a necessary concomitant, whilst the advent of women into mercantile pursuits since the War is a development which our grandparents would have thought impossible, if not positively improper!

Let us examine some of the mechanical wonders that are now considered absolutely necessary in

THE MACHINERY OF BUSINESS

the modern business "block." Time is money, and here is a contrivance to record the arrival and departure of the members of a big staff. If three hundred men and women were each five minutes late that would mean one thousand five hundred minutes in the aggregate, or a loss of twenty-five hours to the firm—so we "clock on." Here is a girl at a telephone switchboard, who transmits incoming calls to all departments by means of "extensions," and is ready to "get" London, Paris, Moscow, and the uttermost confines of the earth according to instructions.

The clash and ping of fifty typewriters assail our ears. Hand-writing in the business world is rapidly becoming obsolete. The office boy or girl who can write a good hand is a rarity. The shorthand-typist, notebook in hand, and capable of "taking down" at the rate of one hundred and eighty words per minute, may yet be superseded by the dictaphone, into which the departmental chief dictates his letters and instructions without troubling his lady secretary to go into his office. By and by she will remove the cylinders from the machine and carry them to her room, where, on *another* machine, the "master's voice" will be repeated like a gramophone record while the lady types. The genius, to whom the adding-up of columns of figures was "as easy as winking" is out of date. We will watch this young gentleman listing and casting hundreds of bills and invoices on an adding machine. The last item being "entered," he pulls over a lever, and, lo! and behold, there is the *total*, and the marvel of it is the machine never makes a mistake! Let us show you another machine, this time an addressograph, which will address a thousand envelopes an hour, and by the side of it is a multigraph to print circulars at the same rate of speed, to put into them. This, by the way, is being done in the publicity department (for advertising as applied to business is the latest of the fine arts), and here are more machines of the same character—duplicators which will multiply letters and appeals so beautifully that every recipient is prepared to swear that he holds the original instead of one of ten thousand copies!

Our model firm makes certain counter sales; there is a cash register for recording them, and it must be a clever peculator who would cheat the cogs of this cunning mechanism. In the museums you may see the cumbersome coffers and treasure-chests of ancient merchants and city corporations. Bound with iron and protected by intricate locks, they were the repositories of gold and silver and valuable documents. To-day the strong-room, constructed of steel and reinforced concrete, and closed with a door which is a miracle of metal plates, revolving bolts and inviolable locks, is the receptacle of the firm's ledgers, account books, and valuable

papers, at the close of the day's work, whilst the cash is deposited in an inner safe guaranteed, like the strong-room itself, to be fire- and burglar-proof.

In the course of a single week a modern business house deals with thousands of letters and documents relating to all sorts of subjects. How shall they be tabulated and stored for ready reference? Ingenious filing cabinets have been invented, and by means of indexes and cross-indexes, the assistant in charge of the filing department is able to produce the required letter at the shortest notice. It used to be said of the old-fashioned, ineffectual filing systems that they were like a cemetery where the document was buried and lost for ever; the manufacturer of the modern cabinet will assure you that, though your papers may be interred, there is always the sure and confident certainty of a joyful resurrection!

We will now penetrate to the board room, a handsome marble chamber with a lofty dome. The furniture is exquisite and especially designed by firms who understand the machinery of business. Elegance and convenience are happily combined with a high degree of efficiency.

The Romance of Modern Business

The Fuggers, with stately munificence, might cancel the bond of Charles V, but they never had at their disposal the mechanical marvels that lie ready to the hand of the twentieth century director. The Colossus of Rhodes—a hundred feet high, and guarding the commerce of the Greek city—was one of the seven wonders of antiquity. But what of the modern colossus, who, sitting at a map spread beneath a sheet of plate glass that covers his table, literally controls the world? The "Captain of Industry" will telephone his instructions to half a dozen capitals.

Nor has the comfort and health of the worker been neglected in the imposing palaces of commerce. Dining and recreation rooms, tastefully decorated, and even gymnasiums, are provided, and out in the suburbs Big Business has its sports grounds where the clerical staff of both sexes win renewed energy from the fresh air and sunshine.

The estate office of one of the largest business blocks in London has printed these words on its prospectus: "One half of a business man's active life is spent in and around his office; the amenities, atmosphere and quality of that office are considerations of lasting and practical value."

In other words, business is no longer a concatenation of fortuitous incidents and accidents: it is a scientific machine that depends for efficiency on its human cogs.

ALFRED G. BARRALET.

THE MACHINERY OF BUSINESS



Courtesy, Burroughs Adding Machine, Ltd.

A MECHANICAL "TYPIST"

The machine which this girl is working is an office printing machine called a Multigraph. It is many times quicker than a girl typist, for in an hour it can produce 4,800 copies of a letter!



Courtesy, Burroughs Adding Machine, Ltd.

A TYPEWRITER THAT KEEPS ACCOUNTS

An accomplished machine that not only types but also does accountancy.



Courtesy, Burroughs Adding Machine, Ltd.

EVEN BOOK-KEEPING IS DONE BY MACHINE

This simple looking machine which, incidentally is quite easy to work, book-keeps with 100 per cent. accuracy. When the machine has done its work the sheets are placed in the drawers at the girl's side until required again.



Courtesy, Burroughs Adding Machine, Ltd.

7,000 ADDRESSES IN AN HOUR

The machine wins again—and by a long head. Where the same addresses are required frequently each is embossed on a small metal plate, which is placed in the machine under an inked ribbon. The envelope is then pressed on to the plate, and according to the type of machine from 1,000-7,000 envelopes can be addressed in an hour.

THE MACHINERY OF BUSINESS



Courtesy, Ediphone

THE MACHINE TAKES THE PLACE OF SHORTHAND

Instead of a staff of shorthand-typists, the latest modern office has typists and ediphones. The business man dictates his letters to the ediphone which makes a record of what he says on a cylinder which, when full, is sent to the typists' department.



Courtesy, Ediphone

EARPHONE-TYPISTS AT WORK

In the typists' department the cylinder is put on another machine which repeats the letter and instructions through the headphones which each typist wears. Each typist can thus work at her own particular job without disturbing her neighbours.

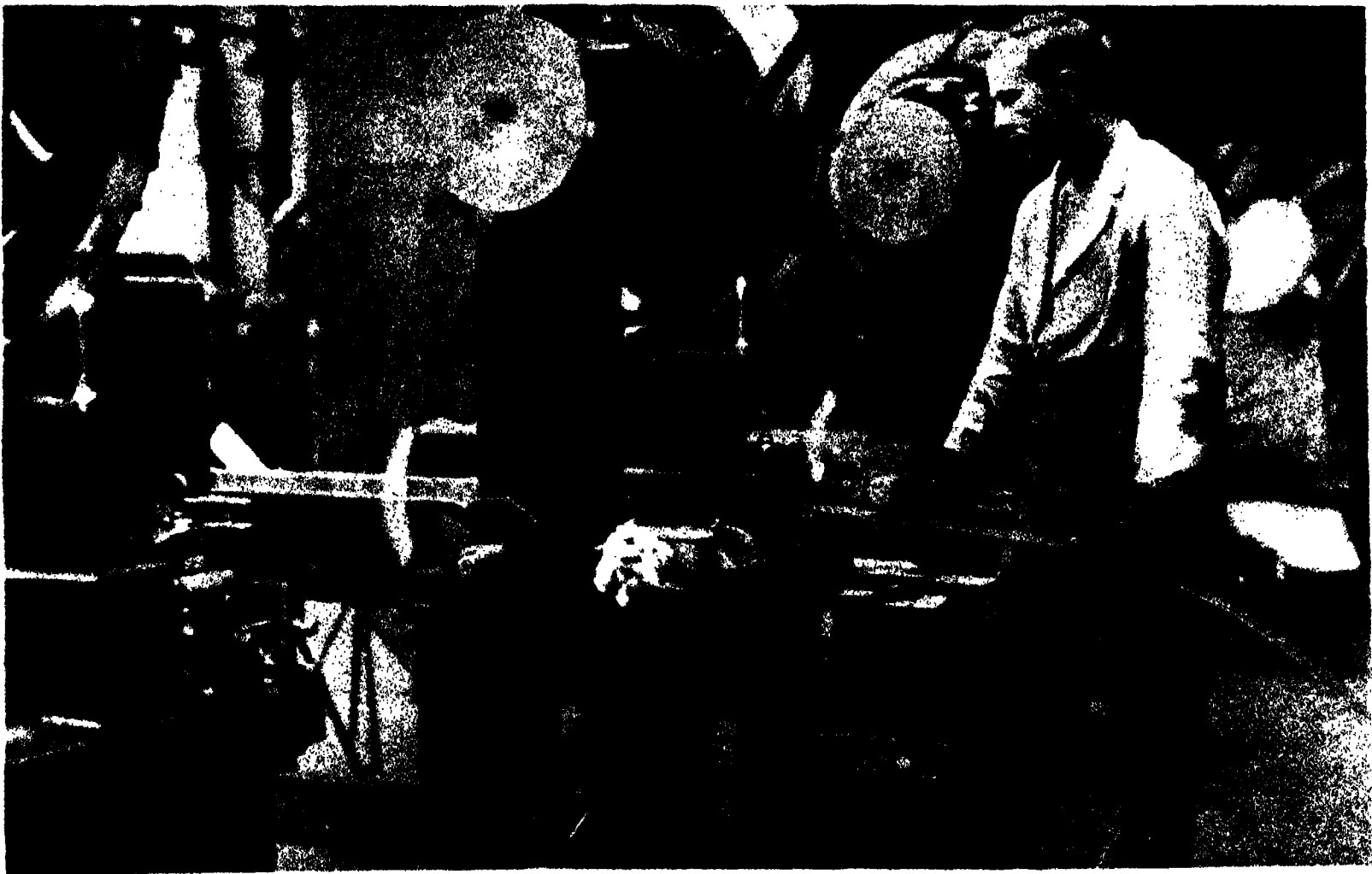
THE MACHINERY OF BUSINESS



Topical Press

POUNDS OF GLEAMING SILVER COINS

At every stage in the making of money—silver coins or copper coins—the Royal Mint imposes all kinds of severe tests to see that the money is up to standard. Here we see gleaming new silver coins being finally weighed before sending to banks.



MAKING MONEY AT THE ROYAL MINT

A strip of metal being fed into a machine which cuts it to the right shape. The blank shapes are later stamped, and, in the case of silver, the edges milled. This milling is done to prevent the debasing of coins by rubbing off the edges.

THE MACHINERY OF BUSINESS



Courtesy, Associated Press

IN THE HEART OF LONDON CITY

A seething crowd of excited stockbrokers, clerks, business men of all kinds, outside the London Stock Exchange. It was closed by the Government in August, 1931, in an unsuccessful effort to prevent Britain from going off the gold standard.

THE MACHINERY OF BUSINESS



E.N.A.

THE HUB OF AMERICAN BUSINESS

Wall Street—the "hub"—presents an unusually peaceful contrast to the picture opposite. The American stock exchange is seen in the front of the picture, the building on the left being an extension. Here mighty fortunes are made—or lost!

THE MACHINERY OF BUSINESS



THE OLD LADY OF THREADNEEDLE STREET

Wide World

Over all this business world stands the Bank of England—keeping the Government's banking account and the other big banks' banking accounts. It is the Bank of England which advises the Government in all matters of monetary policy.

MAN THE ARTIST

WE have seen how—to meet his physical needs—man has burrowed into the earth and stoked his furnaces. But leaving behind man as the producer of material things, we turn now to man the artist. To satisfy the other cravings of his complex make-up, his spiritual self, he has found expression for his feelings in rhythm and tone, form, line and colour, and the conception and arrangement of his thoughts in words—in short, “the arts.”

It is sometimes imagined that art is a kind of hobby, a heaven-sent pastime to enable man to spend his leisure hour contentedly, and to supply a pleasant variation to an otherwise monotonous curriculum of eating, waking and sleeping. But both from the point of view of the artist and his audience, art is as vital to the progress of civilisation as is the development of the sciences.

To express oneself amounts, indeed, to an instinctive desire. Before the dawn of history, man was seeking an outlet to express his inner self by scratching and painting on the walls of his caves his impressions of the world as it existed about him, in much the same way as to-day the screen will express life in terms of the complex contemporary world. The projection of human thought, whether in literature, music, or in painting is bound up fundamentally with our other activities.

In our survey of the arts, we shall start with “art” proper, that is, painting and sculpture and the attendant crafts, such as carving. We shall then proceed to music and dancing, literature, the theatre, then finally to the two twentieth-century media of the cinema and of broadcasting.

The Infinite Variety of Art

The art of one country differs widely from that of another, just as the art of one age and another will seem to be as poles apart. It does, however, remain true that an inborn sense for beauty, allied to a familiarity with artistic things, will give us the ability to appreciate a work of art as such, irrespective of its age and country of origin. We find that we are able to appreciate Japanese carving or a Greek statue as well as the painting of an old master.

In some countries art in its restricted sense of painting is not practised and we find instead art expressed in terms of wood or stone, carving or

the adornment of a canoe. Amongst the Hopi Indians we see it allied to material needs in terms of basketry: and amongst primitives, serving the ends of religion and superstition in a variety of ways.

In countries of western civilisation we find that painting is undergoing so many changes, and with such lightning rapidity, that some explanation of its new forms may prove of interest and may help one to appreciate them.

The Meaning of Present-day Art

Indeed, many people all over the civilised world are baffled by the great difference between many of the pictures painted by modern artists and those which were admired by their grandparents. Briefly put, the main difference is **this**: The painters who pleased the last century painted, as it were, the external appearance of things—pretty ladies, curly headed children, and well-groomed sheep and cattle in carefully shaven landscapes—in great detail. It is this insistence on unnecessary detail which some modern artists feel attracts the eye too much and therefore distracts the attention from the subject of the painting. What they want to do is to paint or carve not only what they see, but what they know.

They want to tell those who see their work not merely that the beautiful lady has features and limbs of a particular shape, but that she can also move, can laugh, can cry, can be angry, perhaps even stupid, can, in fact, be human, and yet, in spite of all this, or because of it, she can still be a beautiful woman. They will try to put on canvas or in stone her character and her human interest; her person is merely the medium through which these are expressed. The beautiful lady is no longer a mere object.

When they paint a landscape they will not concentrate on rendering every leaf on a tree with photographic precision. Minute attention to such details does not make one feel the spirit of the place. And if they paint upon a sunny day they will still want to make the spectator feel that not only can the sun shine on it, but also that the wind can blow across it and the rain beat down on it. They will endeavour to show that movement and change are possible.

The old-fashioned “realist” perhaps satisfied

MAN THE ARTIST

his age, but that age has passed, with the result that many artists have felt compelled to change their methods, though much excellent work is still being done along traditional lines. As the pictures by painters of several different nationalities show, the change is common to all countries where art is appreciated.

The public, in its attitude towards the efforts of the younger schools of painters, sculptors and engravers, is to be blamed in the way in which it

Actually, art has no age and its phases constantly repeat themselves. There is, for instance, in the Victoria and Albert Museum, a picture painted by Raphael that might well have come from the studio of one of the most advanced of present-day artists.

Given freedom and encouragement the artist will strive to express the changing outlook of his own generation upon life, and if to-day he seems to have advanced a long way beyond the artistic



THE PAVEMENT HIS CANVAS

Wade World

All down the ages the true artist has found that he must express himself whatever his surroundings—whether he works in a fashionable studio, in a garret in Montmartre or on the pavement of a busy London street. Art conquers environment.

approaches modern art. People make little attempt to understand what the artist is struggling to tell them. The modern artist is often rightly found to be crude and fantastic to the point of childishness, his colouring without depth, his lines without feeling and the whole without meaning. But looking beyond the surface one will find that to-day there is an attempt to attain more aestheticism and even mysticism which did not exist to any great extent in the art of yesterday.

appreciation of the public, perhaps that is because the public, from his point of view, is lagging behind in the last century.

In modern life commercial art, as it is called, is playing an ever increasingly important part. Posters for advertising purposes are widely displayed and we may be glad that so many of them already bear marks of great artistic distinction. In fact, some of the greatest artists of the day are engaged in commercial poster work for the hoardings.

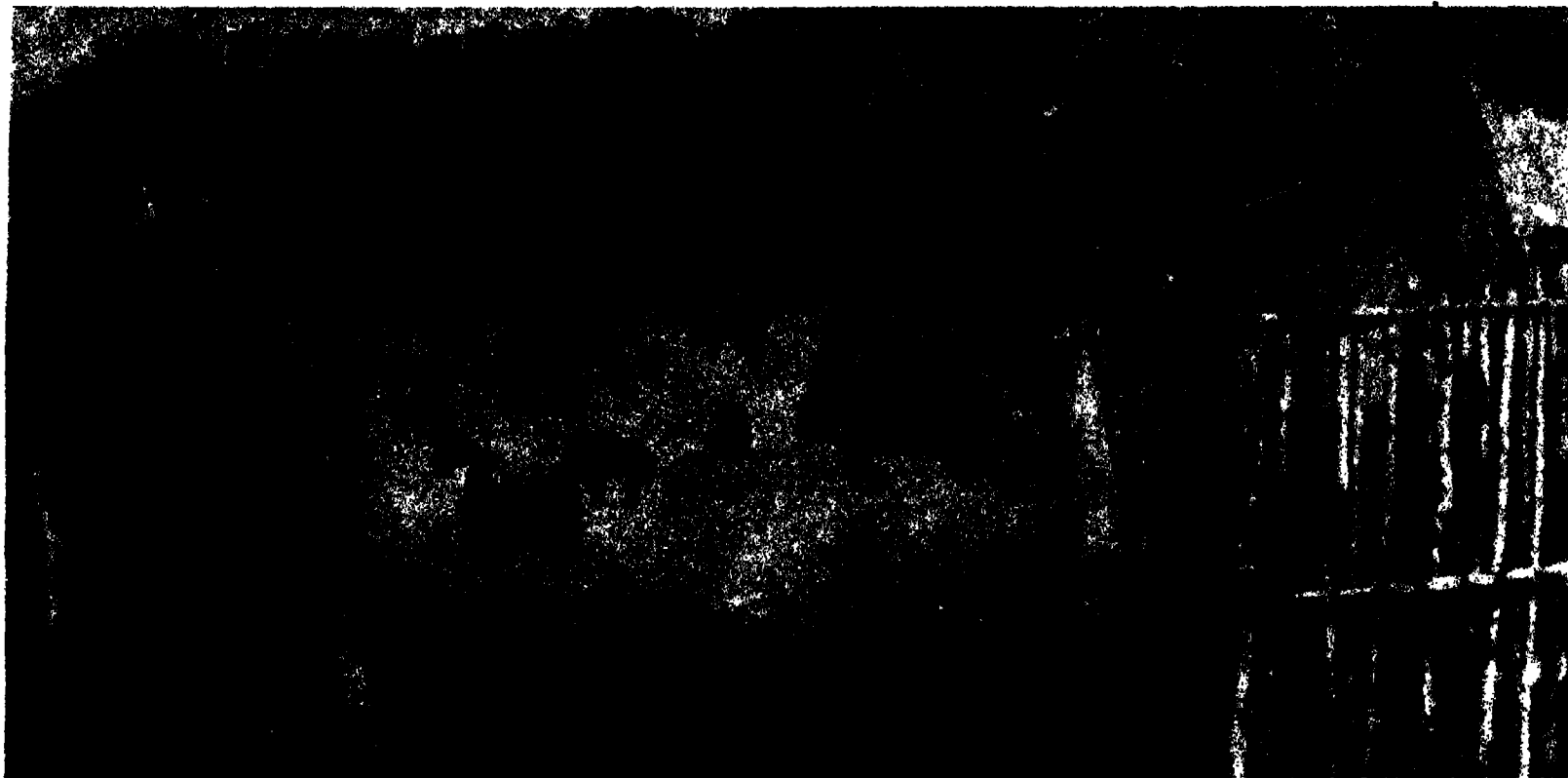


Wide World

PAINTING AS A PROTECTION AGAINST EVIL

This curious creature is an African bogie man. With its crudely patterned attire, it is supposed by the superstitious natives to ward off evil. Native art almost always has some purely utilitarian motive of this kind behind its conception.

MAN THE ARTIST



Wide World

ANIMAL PAINTINGS ON A HUT IN NORTHERN RHODESIA

Artists the world over find subjects in familiar objects near at hand—the things they can see and study daily. This South African artist has depicted various animals in the position easiest to draw—side views when the animals are still.



G.P.A.

AN ETHIOPIAN ARTIST LOOKS AT THE BIBLE

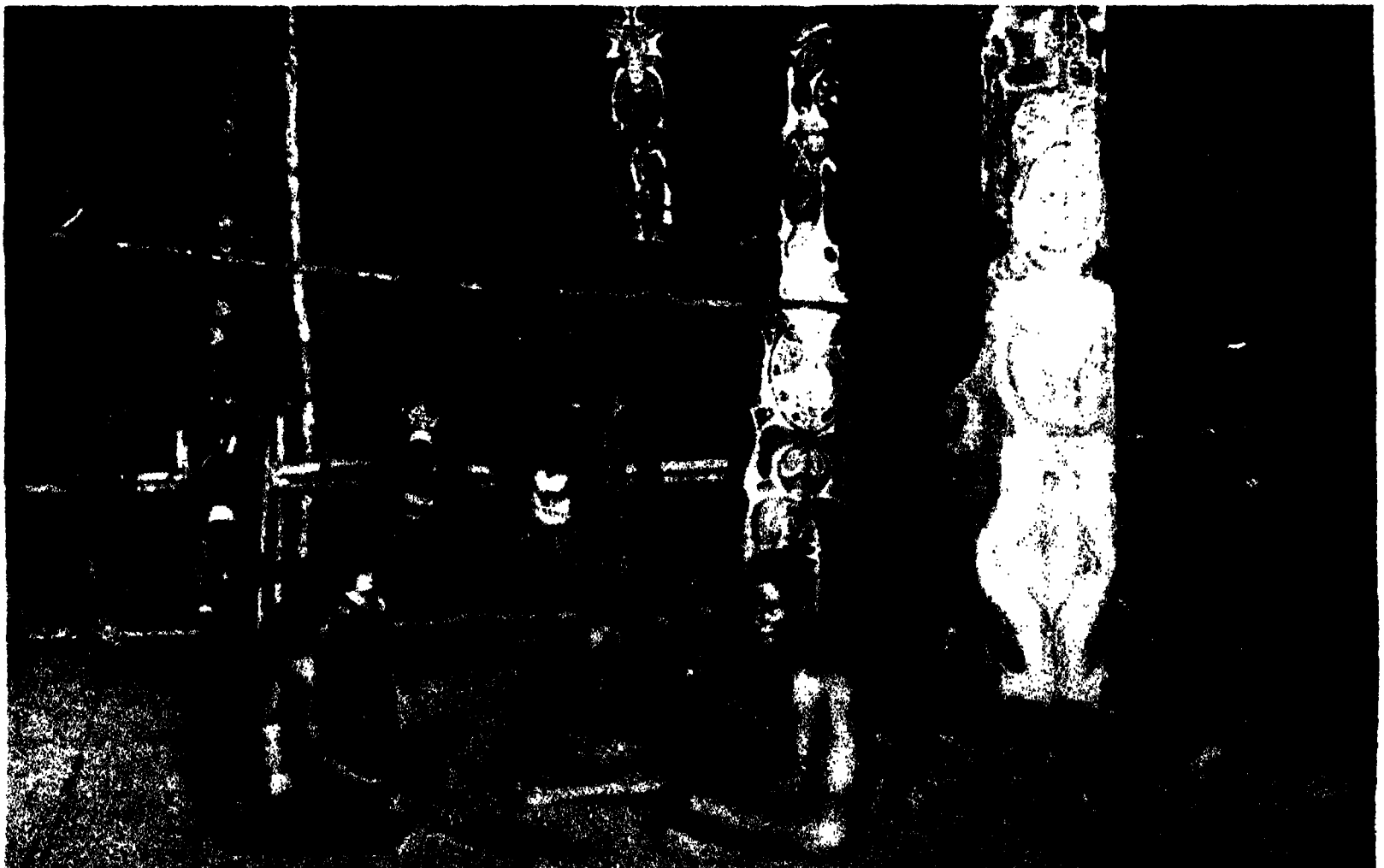
The Bible is a never-ending source of inspiration. Here we see an Ethiopian artist's expression of Adam and Eve in the Garden of Eden, of Noah and the Dove, and of Jonah and the whale. They are simple expressions of these Bible stories.



Wide World

THE DECORATED HOME OF A TRIBAL CHIEF

Here is native art used to decorate the home of a chief of the tribe. The effect is very pleasing and the repetition of the pattern, with the artistic adaptation round the door, shows a well-developed sense of design. Note the carved supports.

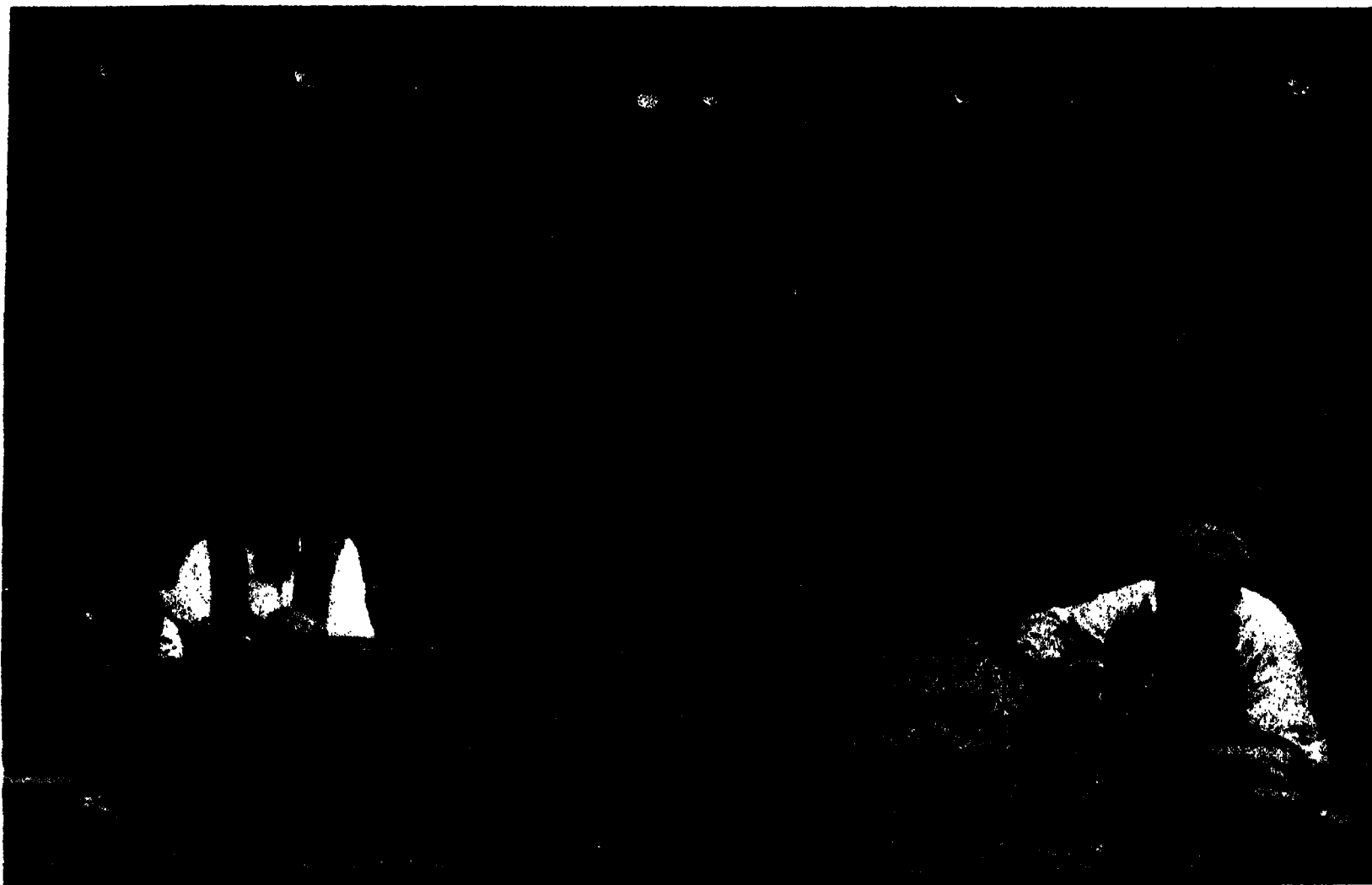


Wide World

PAINTED SHIELDS AND COLUMNS IN NEW GUINEA

In this club-house live the gods of the tribe. The painted columns with their fantastic designs are supposed to possess strange powers. The shields are valuable tribal possessions, much skill and care having been devoted to their production.

MAN THE ARTIST



E.N.A

THE THREE-FINGERED HANDS OF MAORI CARVING

Examples of carving by the Maoris of New Zealand. Most human figures in Maori work possess only three fingers on each hand, in memory of Nuku-mai-teko, their traditional first decorator, who was afflicted in this way. Carving is a very ancient art, and one of the easiest ways that peoples of long ago had of leaving behind any record of themselves.



E.N.A

BEAUTIFUL BASKETRY OF THE HOPI INDIANS

This Hopi Indian woman of Arizona, U.S.A., is decorating pottery made by members of the tribe. These Indians are very skilful with their fingers, and produce a great deal of very artistic work. Their skill in basketry is outstanding.



A GRIM FIGUREHEAD ON A WAR CANOE

Wide World

Here the native has been at considerable pains to produce a really terrifying figurehead which will frighten the enemy. It is not intended to be a decoration to the boat, but is another instance of native art with a definite purpose behind it.



E.N.A.

CARVINGS BY AN UNTAUGHT WEST AFRICAN NATIVE

The Descent from the Cross, carved by an untaught Christian negro for the altar of a mission church. The figures are based on the type of people the negro ordinarily comes into contact with. Contrast this with the next page.



Courtesy, Underground Railway

THE SPIRIT OF NIGHT EXPRESSED IN STONE

Many modern artists travel to foreign lands, whose peoples and customs much influence their work. Jacob Epstein's work "Night" is here reproduced. The sleeping figure represents human activity sleeping, with the figure of night watching over all.



A CHINESE GATEWAY DECORATED TO WARD OFF EVIL

E.N.A.

These "devil screens" guard the entrance to the palace of the military commander of Peking. The decorations have purposely been made as crude and hideous as possible in the belief that they will ward off evil spirits and other enemies.



THE QUAINI IMAGES OF A JAPANESE GATEWAY

E.N.A.

These quaint figures decorate the Great Gate at Nikko, a Japanese town which is an important centre of religion. A central shrine is guarded by several gates all elaborately carved with many figures, some human, others strange mythical figures.



E.N.A.

GUARDIANS OF THE SACRED SHRINE

Two watchful figures on another part of the Great Gate at Nikko. Through the centuries they have occupied this exalted position, and it is a tribute to Japanese craftsmanship that they have weathered the years and retained their vivid colours.



E.N.A.

RIVERSIDE SCENES FROM JAPAN

Flowing lines and a meticulous attention to detail are striking features of this painting by a great Japanese artist named Utamaro. Though the faces of all the figures are almost identical, there is a wealth of variety in their clothes. The group on the left represents three ladies at a landing place on a river, that on the right two ladies and a man on a pleasure boat.

MAN THE ARTIST



A POEM IN IVORY

The Japanese are famous for their beautiful ivory carvings. This figure, which stands 15½ inches high, is of a lady of the royal court, holding in her dainty right hand a precious sacred jar.



THE SMILING WOMAN

This picture represents not one individual woman, but the artist's idea of a type of woman. In other words, the artist did not set out to paint a portrait. There is beauty and power in her attitude, a fullness and character, in fact, which is in striking contrast to the "prettiness" of the Japanese artist's ivory carving. The painting is by one of the greatest of British artists—Augustus John.



Courtesy, National Gallery, London

A PICTURE OF A MOOD—BOREDOM

This is not a portrait of a man and woman, but of a mood—a mood of utter boredom. Every line in the figure of the woman is bored, and with perfect balance every other line in this picture by Sickert seems to be drawn towards her.

MAN THE ARTIST



A STREET IN A FRENCH VILLAGE

The roofs of the buildings form a charming background to the groups of gossiping villagers in the front of this picture of a village street. The painting is by Pissarro, who made a study of the effects of sunlight on Nature. Such art has very little in common with modern impressionism, which is, in reality, an artist's idea of what nature ought to be.

Alex Reid and Lefevre, Ltd.



A LANDSCAPE IN AIX-EN-PROVENCE

Alex Reid and Lefevre, Ltd.

This is a painting of a view of the charming countryside of Provence. The upright lines of the trees balance perfectly the sweeping horizontal lines of the fields. Cézanne, who painted this picture, found inspiration in the beauties of Nature for much of his work. It should be noted in both these typical paintings on this page that the artists are realists.



A CHILD CARESSING A DOVE

Alex Reid and Lefevre, Ltd.

This painting is beautiful in its simplicity of line. It expresses perfectly the sincerity of the child's love for the tiny bird. The picture is by Picasso, a famous Spanish artist. The absence of meticulous detail has not destroyed reality.



A PORTRAIT IN SCULPTURE

Garnaudon

This piece of sculpture is not only the portrait of a man, but of a writer—a great, dominating figure. Why dress him in a strange robe? Because the sculptor, Rodin, found its strong, flowing lines best suited to convey the impression of Balzac.

MUSIC—THE UNIVERSAL LANGUAGE

WHEN a tribe of savages, working magic, dances to make the sown seed spring up, or when its warriors stamp to the beat of war drums, one sees what was the birth of musical rhythm. When its women reiterate a keening lament, they use the earliest form of melody. Together, rhythm and melody make a tune—with words fitted, a song. Music is as natural as human speech, and must have had its beginnings almost as early. Like language, too, it is known to have greatly differed for different races. But, far more easily than so many languages, its different forms blend in a common stock, an esperanto of sound made delightful by art for all humanity.

Of all arts it has had the largest and richest development in modern times, and it is the most moving of them. There is none shared by so many people, aware of the art or ignorant. Music exists as part of life, for life's sake, serving to energise, to give pleasure, to console, to uplift and refine emotion. Sir Hubert Parry pointed out that it must have been a mainspring, too, of social life and sympathy, and so of civilisation.

This idea of value fits with the fact that its known history begins in religious rites, continuing through the Middle Ages with an elaboration of choral singing, when harmony was devised so that voices of differing pitch could go together. As civilisation broadened, so did music. The singing in Egyptian, Greek and Christian worship was a mere prelude or overture.

A Nest of English Singing Birds

When the Renaissance banished the gloom of the Dark Ages, folk-song came into its own with tunes for madrigals and glees, and England was soon "a nest of singing birds." As early as 1240 a French hunchback produced surprisingly a simple comic opera. There was a busy craftsmanship of musical instruments. Lully conceived the first ballet, Handel gave us oratorio, in Italy musical drama appeared, and finally came pure music—symphony, sonata, concerto, fugue, and the rest. All these were social as much as artistic gains. In our days of astonishing invention it became possible to record sound and reproduce it, or to transmit it over great distances, so that the poorest

householder may hear the best music daily if he will. For this art the civilised world is organised, as for nothing else with the same simplicity and free consent. More than that. Music is loved and practised by ever-growing numbers, and not least of all in our own country.

Musical England

The quick promise of Elizabethan days was not illusory. At that period lutes hung in barbers' shops, and customers beguiled the time of waiting with them. The simplest music of that period was easily made, no doubt; and, in spite of Puritanism, which discouraged pleasures, part-singing continued a widely popular habit. A century later, Pepys, advertising for a maid servant, required as an ordinary qualification that she should be able to take her part in it.

No brief article can trace the steps of so great an evolution, or show how this composer and that, this tendency of taste and that, this nation and another has enriched it with new expressions and new instruments of sound. The story is far too big and too technical. We must be content here to mark the special ways in which our own people have been readiest to share the art's gift of zest and sweetness.

From the earliest times we have loved song—loved to make music as much as to hear it, and loved to make it in company. The oldest musical score we have with words, the six-part song of "Sumer is icumen in," homely, happy, and graceful with a skill that proves long prior cultivation, dates from 1240—four centuries before any Continental school of part-writing arose. Dufay, who founded a great Belgian school from which Italy drew her masters, was taught by John of Dunstable, an Englishman; and nothing in history is more authentic than the fact that our nest of singing birds was native. Non-conformity with its hymns and Handel with his great oratorios kept the tradition alive and gave it scope; so that now our choral singing is equal to the highest demands that music, ancient or modern, can make upon it. One recalls that it was in England, with masters like Byrd, Farnaby, Arne, and Purcell, that the virginals were famous first, and that, earlier still, English lutenists had been welcome abroad. This tradition is carried on to-day in the great orchestras of our islands.

MUSIC

English music owes little or nothing to subsidy and patronage. These are aids not to be despised, since they have fostered opera in Italy, Germany and Russia, and have enabled great composers to live while producing masterpieces; but they do not serve as proofs of national aptitude, nor can they increase it. Our ultimate succession to the line of great creative artists—Parry, Elgar, Delius, Bantock, Vaughan Williams, Holst, Bax; and others—has been a consummation, and is ripe with promise. They and a host of lesser music-makers have appeared like flowers in a virgin soil, fertile naturally—a spontaneous growth of the highest individuality.

Music To-day and To-morrow

It must not be imagined, however, that our national music has been unaffected by outside influences. It has prospered in contact with all that other peoples have had to give, and so it has never narrowed or lost direction. But the contact is nowadays far wider and closer than it was in earlier centuries, and therefore more disturbing. Wireless and the gramophone, as well as the general growth of world intercourse which came with steamships and railways, make it a contact of all and sundry. In time past it was our skilled musicians only who looked abroad, to adopt, for example, the symphony form as Shakespeare borrowed plots from Petrarch and made them his own. Now our native individuality is in danger of being killed by the very ease in which contact with inferior influences can be made. This applies to every aspect of our art and character, but music suffers more than the other arts because it is the most popular, and because the flood of intercourse came before the spread of musical education had taken effect.

What will come of it? Musicians do not pretend to say, but are not anxious. They accept, like the rest of us, an age of change, and hold to their ideals with minds open to developments; aware that what is best in the art must endure and what is not true to its greatness perish. It is in the melting pot with architecture, sculpture, painting, poetry, and all else. The arts have been disconcerted and perplexed by the zeal for experiment and conquest which goes with science, and they are busy with research,

trying out new and old devices. Beauty, however, remains the supreme achievement of every art. In the quest of new liberties or reversions to old forms from a new angle, composers like Stravinsky, Delius, Schönberg, or Hindemith enrich it, but smaller experimentalists appear careless of it. Much modern music, so-called very tolerantly, is without inspiration and more or less ugly and cacophonous—much, on the other hand, demands a higher degree of intellectual concentration to be understood than is usually spared by the general public. There have been times of sharp development before, only capable of being judged after they had passed; and the present is certainly bewildering. We must, however, preserve our tolerance, remembering how Wagner's most popular opera, *Tannhäuser*, was condemned by accredited critics as the harsh impertinence of a mountebank in 1861; how the first performance of *The Rite of Spring* caused a riot; and how even the blurred, melancholy chords of Debussy's most delicate sound-paintings were laughed to scorn when they first appeared. Now these have become common-places of harmony. Any programme of light music to-day may contain "The Pilgrim's Chorus" or "Clair de Lune." We have become accustomed to these new tone combinations; and in the same way, who knows whether the "advanced" music of to-day may not become the "popular" music of to-morrow. The position of modern music is probably due to a spirit of restless challenge not directly associated with it; but music—in part, at least—will profit by this disturbance as surely as art is not science. We may be sure, looking forward, that all is well with the progress of music.

Music and the Dance

In the pictures which follow we shall show you music in its closest associations with man. Chief among these is, of course, the dance; and so important that we have devoted a special section to it following our examination of the savage and civilised music of the world. Rhythm and melody attended the birth of the arts: it is only fitting that these two should come together at this point in the democracy of the dance.



Keystone

MUSICAL CAVALIERS 1300 YEARS OLD

This group of seventh century stone figures was dug out of a tomb in the interior of China. In common with other ancient civilizations the Chinese at that period provided their dead with images of every single thing that they might be expected to need in the other world. And so these merry companions played sweet music for the soul on its long journey.



E.N.A.

THE KING OF RUANDA SENDS A MESSAGE BY PRIMITIVE "WIRELESS"

"Bush Telegraph"—the art of tapping out messages on specially constructed drums—is, as we have already mentioned, carried to almost uncanny lengths in the African jungle. Villages many miles away are able to pick up the message clearly.

MUSIC



Wide World

A RARE NATIVE MUSICAL INSTRUMENT

This "marimba" was made by the grandfather of the old man who is playing it, and is a type that is rapidly becoming extinct. It resembles our xylophone. Wooden slats tied over graduated gourds (which act as sounding boards and intensify the sound) are beaten with wooden hammers held in each hand. Some European dance bands use a "marimba" to-day.



G.P.A.

A DANCE-BAND OF CENTRAL AFRICA

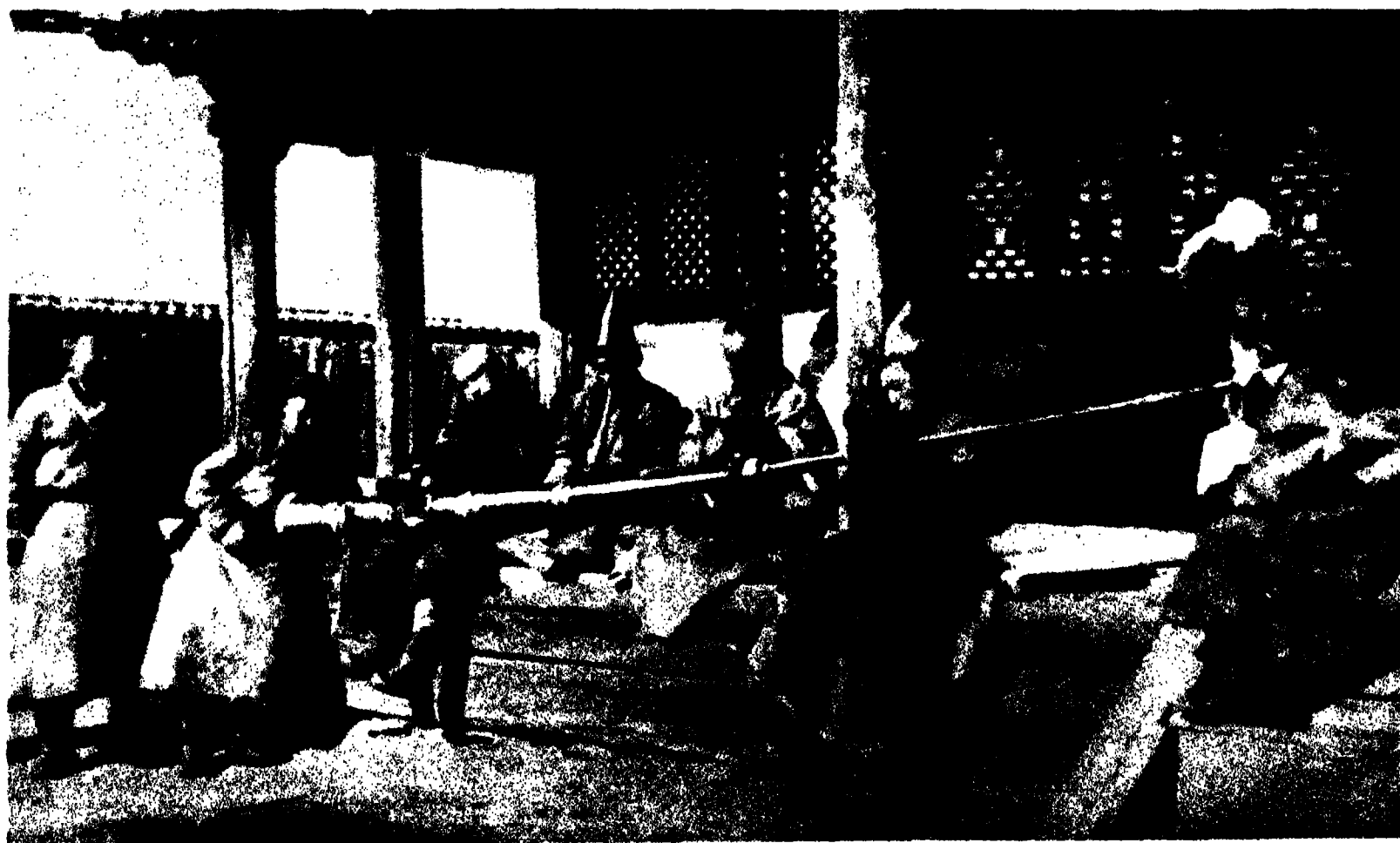
The Hausa tribes of Central Africa have progressed as far as simple wind instruments. The drums and "tympani" of this combination are augmented by a metal flute or pipe with finger-stops. African races do not use the same scale as we do and their tone-combinations are such that their music sounds as harsh and discordant as ours probably does to them!



FIJI IS CONTENT WITH THE SIMPLEST SOUNDS

E.N.A.

The Fiji islands make music by striking a rounded polished piece of ebony with two short clubs. Difference in rhythm and tempo are the only variations possible since there is no means of altering the pitch. The sound is similar to the wood blocks used in modern dance bands which have adopted several primitive instruments such as Chinese temple blocks, etc.



MUSIC BY THE YARD

Wide World

The horn is a characteristic of Thibetan music, and, as you can see, ranges in length from a few inches to many feet. The monks attain to great proficiency on these enormous trumpets, in spite of their unwieldiness. The "solemn concourse of sweet sounds" is very impressive when heard in the neighbourhood of a monastery perched high on the Roof of the World.

MUSIC



G.P.A.

MUSIC FROM THE HUNTSMAN'S BOW

Here the stringed instrument makes its first appearance. A plucked bow with a hollow gourd as sounding-board produces pleasant harmonies in combination with bamboo flutes. A different tone is achieved by using a bow vertically on the string. The music of this sextette sounds melodious enough—if a trifle monotonous! This picture comes from South Africa.



Wide World

ANNAMESE WOMEN MAKE MAGIC MUSIC

These two Indo-Chinese women are in their ritual costumes as sorceresses and play on long-necked "lutes." Extremely delicate control is possible with such instruments. They can even play in quarter tones—that is, notes that lie between the black and the white notes on our pianos. Our stringed instruments can do the same, but we do not often hear them.

MUSIC



AN INDIAN HORN OF CEREMONY

Associated Press

The twisted shape of this trumpet shows that it is descended from the curled ram's horns of earlier days. Wrapped in its decorative draperies it is being used at the marriage of a Maharajah to mark each stage of the long and tedious ceremony.



G.P.A.

" THE MERRY, MERRY PIPES OF PAN "

Pan-pipes are not confined to classical Greece, as may be seen in this picture of Peruvian Indians at Cuzco playing four-fold pipes of wood, painted and decorated in bright colours. Pan-pipes are to be found with almost every pastoral race.



Wide World

A TURKISH " DRUM-AND-FIFE " BAND

The Turkish janissaries—or members of the Sultan's bodyguard—used to play ancient traditional music before him every week. As the Sultan no longer exists they now earn their living by performing publicly twice a week in the streets.

MUSIC



THE FRENZIED PULSE OF THE TAMBOURINE

Wide World

From the frozen arctic regions of Mongolia come rhythms and dances that have been passed on to the Western world through Russian music. This merry group is obviously enjoying the heavy exciting beat of their giant tambourine.



DEEP-ECHOING DOWN THE VALLEY

Wide World

In certain parts of the Alps the Alphorn is still used to call the cattle to be milked. Like the Thibetan horn, it may be many feet long and is made of wood bound round with bark fibre. Slow and simple tunes can also be played upon it.

MUSIC



THE PLAINTIVE MUSIC OF JAPAN

The long low "koto" is the national instrument of Japan, but it is probably not so familiar to Western readers as the Samisen which figures so largely in their art. Both instruments are played with a plectrum and emit soft tinkles that are the very embodiment of the fragile grace of Japanese culture that appears to be waning under the influence of Western materialism.



WI' A THOUSAND PIPERS AN' A' AN' A'!

Sport and General

The national instrument of Scotland is known in other mountainous countries, such as Greece and the Tyrol, but nowhere else has bagpipe music risen to such heights of richness and splendour. This is a view of the climax of the Cowal Games of Dunoon—the march past of a thousand pipers; but a single player's music on the evening hills strikes a more romantic note.



AN OPEN-AIR CHORAL SERVICE IN YORKSHIRE

This famous open-air service of anthems and solos is held once every year and is known as a "Yorkshire sitting-up." The service is always well attended and the singing is conducted by a mill-owner who is seen at the left bottom corner of the picture.

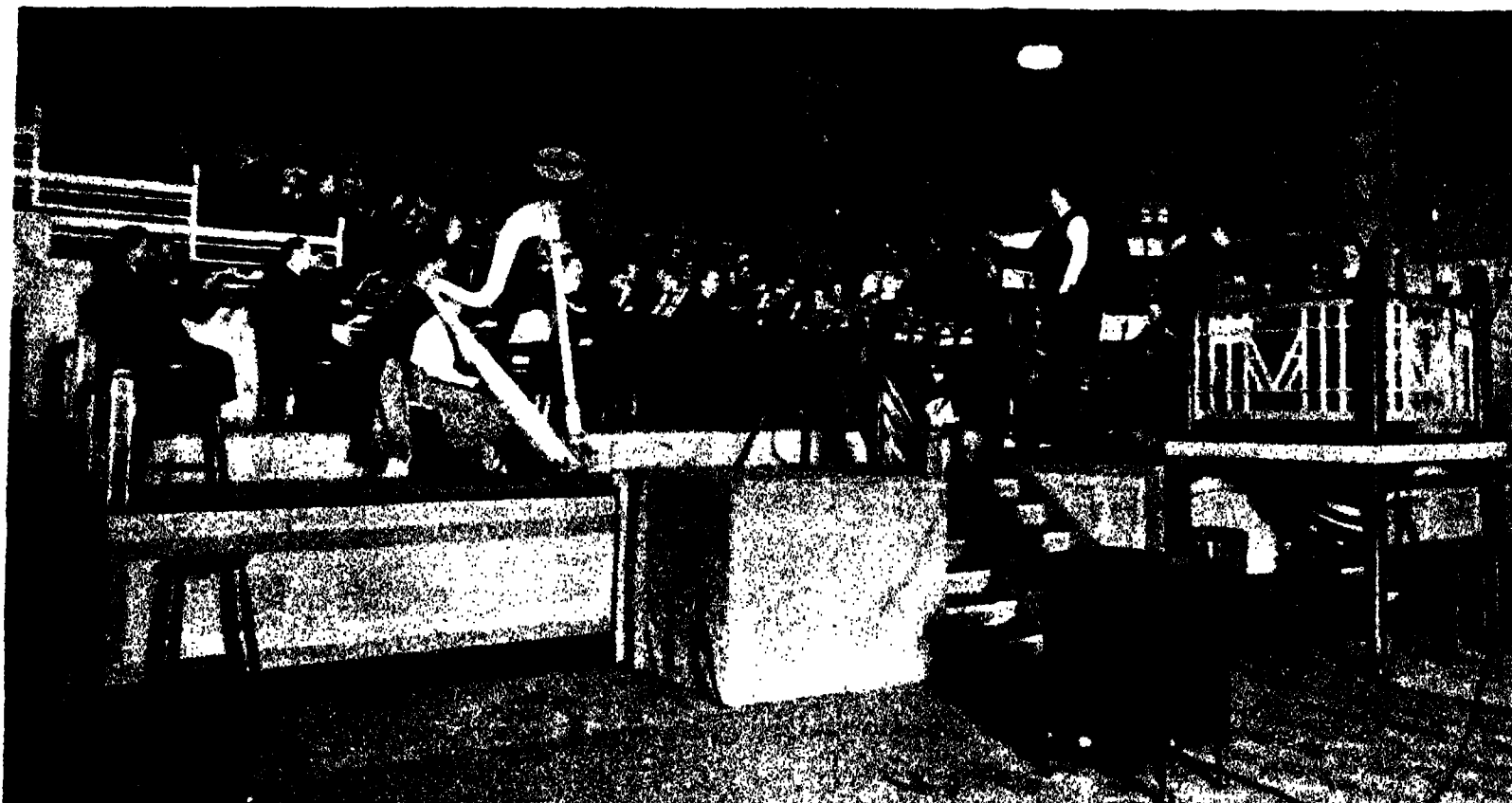


THE DRUIDS MEET AT THE LOGAN STONE

Sport and General

The Eisteddfod or Welsh bardic congress is held annually in different towns for encouraging national music and literature. Here the hymns are being solemnly chanted to a harp accompaniment from the Logan stone at Treorchy, in Glamorgan.

MUSIC



Courtesy, Columbia Records.

THE HIGHEST POINT IN MUSICAL EVOLUTION

The modern orchestra is capable of tone-effects and sound combinations undreamed of only a score of years ago. Here is the famous London Philharmonic Orchestra recording for the gramophone under a famous conductor—Sir Henry Wood.

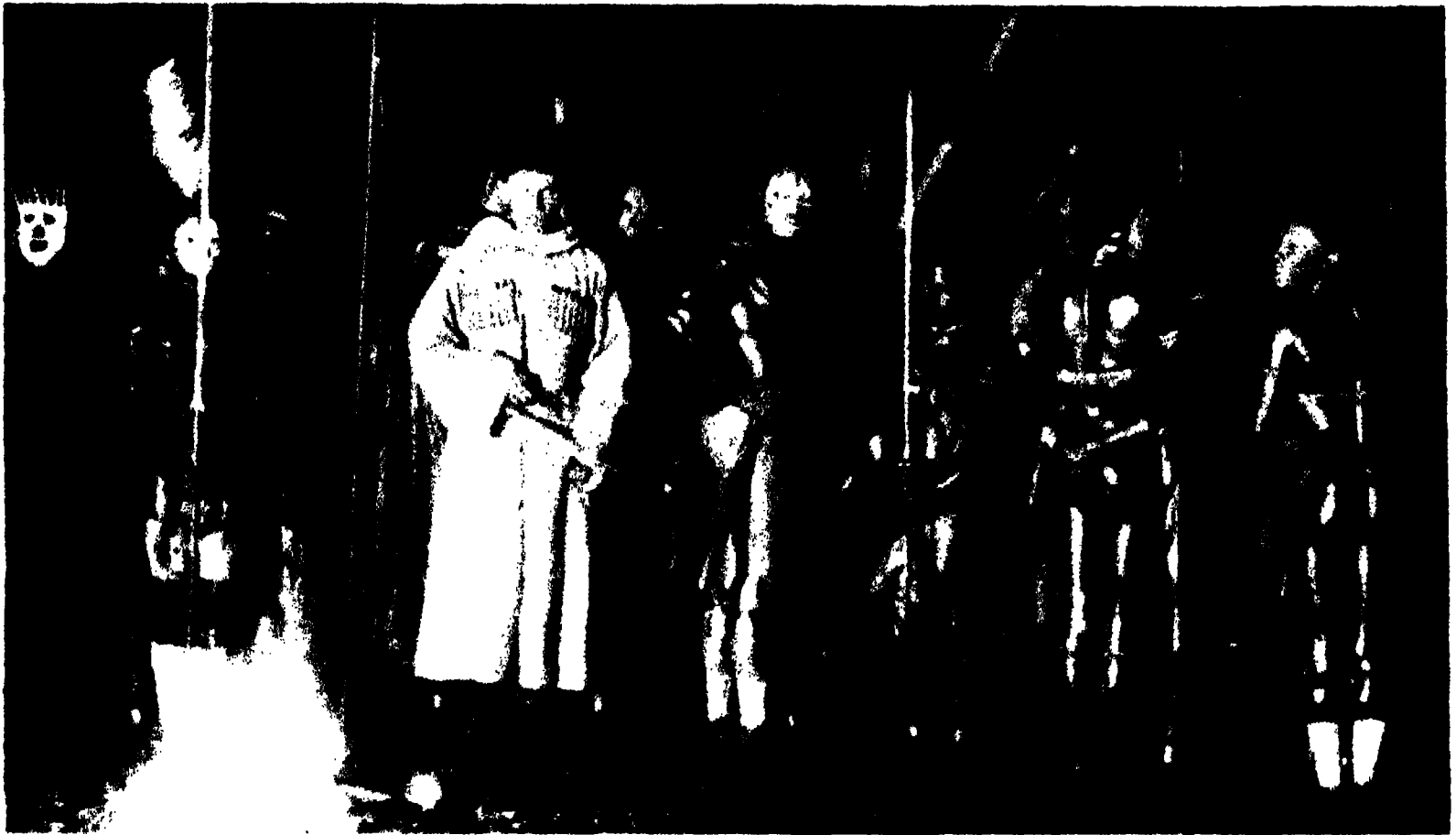


MUSIC BLENDS WITH DRAMA

Times

No musical survey is complete without reference to opera. Since Wagner welded the classic forms of opera into the music-drama, it has become more and more popular. Here we see the first act of *Carmen* during a performance at Sadler's Wells.

DANCES OF MANY LANDS



Wide World

DANCING TO CHARM THE NEW SOWN SEEDS

This is the M'Gongu dance which takes place in the Highlands of Kenya during the season in the year when the beans are planted. About five hundred couples gather round a circle of camp fires and indulge in song and dance until midnight.



E.N.A.

THE TRIBAL DANCE AT A JU-JU FEAST

Superstition is the motive for many native dances, which are often performed to placate the wrath of a god or in honour of a favourite ju-ju. Here are youthful Ibo natives of Onitsha in Southern Rhodesia performing one of their tribal dances.

DANCES OF MANY LANDS



E.N.A.



E.N.A.

A ZULU STAR TURN

A ZULU WAR DANCE

Commencing with a slow tapping of the feet on the dusty ground, this war dance of the Zulu warriors gradually develops speed until the ground literally trembles. The dancers work themselves into an absolute frenzy, and often demonstrative dances, such as that shown here, have ended in tragedy. The only resemblance that the average native dance bears to dances of civilised dances is in the rhythmic accompaniment: this is provided either, as here, by stamping feet, or by the beating of drums.

These doughty warriors, dressed in skins which remind us of their prowess as hunters, are the champion dancers of their tribe. Apart from the rhythm of what to us is a monotonous beat of the feet, there is comparatively little body movement.



G.P.A.

A CANNIBAL DANCE IN FIJI

Armed with beheading knives and dressed in warrior costumes, these two Fijians are about to give a demonstration of an old savage dance. Two generations ago, Fiji was peopled by cannibals, but to-day the natives are all well-behaved and industrious, and most of them have been converted to Christianity. These two natives entertain white visitors

DANCES OF MANY LANDS



AN INDIAN WAR DANCE

F.N.A.

Most war dances are survivals of a savage past, and only in a very few parts of the world are they still used to stimulate the lust for war. Here, for instance, we see a Bhil War Dance at Dehad in the Bombay Presidency, with interested spectators peacefully watching. The weapons provide the only clue pointing to a distant bloodthirsty past.



A WILD ORGY IN NEW GUINEA

Wide World

This picture was taken in the wilds of New Guinea of a scene which has never before been photographed. The natives are holding a dance which lasted for three days and three nights, after which it broke up into the customary unbridled orgy.

DANCES OF MANY LANDS



A DANCE HALL ON THE DESERT

E.N.A.

Dancers who are accustomed to the smoothness of a modern dance hall with sprung floor would find it difficult to waltz on the shifting sands of the desert. These Ouled Nail girls, near Touggourt, in Algeria, do their turn with sand for a floor.



G.P.A.

THE DREAD DEVIL DANCERS OF TIBET

In striking contrast to the peaceful setting above are these devil dancers of Western Tibet. Their whole costume savours of evil, from the skull-crowned head-dress to the fantastic aprons. When their dreadful-looking masks are added, these devil dancers strike terror into the hearts of the superstition-ridden natives, who are thereby reduced to an obedient state.

DANCES OF MANY LANDS



THE FRENZIED DEVIL DANCERS OF THE SUDAN

W. H. W. 1912

Wherever devil dancing is found, although the actual methods may vary, the motive is the same. Fanatical dancers raise themselves into a frenzy of religious fervour, at the end of which they often fall to the ground foaming at the mouth.



THE BE-JEWELLED DEVIL DANCERS OF CEYLON

J. N. A.

Every gesture or movement in a devil dance has a special significance, and even the slightest change in the prescribed ritual would be held to break the spell. Notice, for instance, the position of the thumb and first finger of the dancer's right hand!

DANCES OF MANY LANDS



E.N.A.

TEMPLE DANCERS OF BURMA

Strange are the ways of man, and equally strange are many of his religious customs. He worships many different gods and in many different ways. Here, for instance, is dancing used in the service of religion. These Burmese girls are temple dancers, performing a dance on a festive occasion. In fact, all the arts are employed to make this religion joyous.



E.N.A.

SINGALESE STICK DANCERS

In Ceylon, exhibitions of stick-dancing by tom-tom beaters are given on festive occasions. The performers dance crouched or erect round a leader, who keeps time on the cymbals, striking their sticks against those held by their companions or, either side in various intricate figures. Naturally, melody as we understand it, is not appreciated by these natives.

DANCES OF MANY LANDS



Associated Press

THE TRIBAL DANCE OF A DYING RACE

The advent of the white man to America sounded the death knell of the Red Indians. In spite of his great bravery he was unable to withstand the modern weapons of his adversary. The remnants, although proud of their ancestry, are fast dying out. Occasionally they don their full war-paint and perform one of their war dances, a tragic survival of the past.



AP

DANCING THE HULA IN NEW ZEALAND

The adoption of Western customs, especially the wearing of clothes, is having a serious effect upon the slowly dying race of Maoris of New Zealand. Pneumonia, for instance, was an unknown disease to the stalwart Maori race before the white man arrived. This attempt at a tribal dance is tragic, its original virility has departed with the advent of civilisation.

DANCES OF MANY LANDS



F.N.A.

DANCING FOR RAIN IN NEW MEXICO

Not only is this primitive ceremony regarded as a prayer for rain, but it is also a dance of thanksgiving. It combines the relics of the pagan worship of the Indians with the religion brought by the Christian padres. It usually lasts for hours.



F.N.A.

A SACRED SNAKE DANCE IN ARIZONA

Religion again plays an important part in the sacred snake dance of the Hopi Indians of Arizona. These strange-looking fellows belong to a mystical society, the secrets of which are strictly guarded by those who are initiated into its peculiar rites.

DANCES OF MANY LANDS



Wide World

BAREFOOTED COUNTRY-DANCERS OF THE EAST

These maidens are trained dancers and have their many contracts to fulfil at the various festivals and exhibitions. For their band they have only four musicians who all play the same type of instrument—a banjo-like string instrument.



F. V. I.

THE JAZZ DANCE BAND OF SIAM

In Siam, dancing forms a part of every festive occasion. Here we see court dancers performing at a royal garden party. Many of the instruments of the orchestra are reminiscent of a jazz band, especially the drums and Siamese xylophone.



THE SUNSHADE DANCE OF JAPAN

E.N.A.

Japan, the sunny land of the cherry tree and multi-coloured peacocks, presents a fitting setting for the fascinating sunshade dance. No longer, however, are the feet of the women forced into incredibly small sizes which Nature never intended.



THE DANCE OF THE STRAW DOLLS

E.N.A.

The joy of "dressing-up" is not confined to children. These Japanese women, with their picturesque straw costume and head-dress, are performing the Dance of the Straw Dolls. Each dancer carries a drum upon which the rhythm is beaten.

DANCES OF MANY LANDS



A POLISH WEDDING DANCE

E.N.A.

In many parts of the world, wedding festivities extend over a lengthy period, and, unlike our own country, are attended throughout by the bride and bridegroom. Here we see a wedding dance in progress in a remote Polish village, with the bride in the background wearing an elaborate floral head-dress. Violins and concertina are providing the music.



THE "BARN DANCE" AT A SOVIET FÊTE

E.N.A.

In Russia, as elsewhere, dancing provides a welcome relaxation from the daily round and common task. Here is a dance in progress at a Soviet "Kolkhoz," or communal farm in the Caucasus. The shawls remind one of Lancashire.

DANCES OF MANY LANDS



E.N.A.

" THE HUSBANDS DANCE "

The study of national dances brings to light many interesting customs, especially since a large number of them are handed down from generation to generation. The Husbands Dance is performed in the Petseri District of Esthonia on May 16.



E.N.A.

THE QUEEREST DANCE ON EARTH

This is a curious picture from Tajikistan, the autonomous Soviet State north of Afghanistan, showing two Tadzhiks performing the "Cup of Tea Dance," which for centuries has been the most popular measure of the nomad inhabitants.

DANCES OF MANY LANDS



Wide World

A DARKIE DOES A STEP DANCE

Step-dancing to banjo and violin is a favourite amusement of the plantation negroes of the Southern States of U.S.A. Seated on bales of cotton, the players urge the dancers to ever quicker movements, while the bowler-hatted fellow claps.



E.N.S.

THE DANCE OF THE SHEPHERDS

Here is another seasonal dance. Czechoslovakian peasants perform their ceremonial dance at the end of sheep-shearing. The ceremony is attended by all sorts of quaint, superstitious and semi-religious rites. Note the model of a church.

DANCES OF MANY LANDS



DANCING IN A VILLAGE SQUARE

In the remoter parts of Europe, the many forms of amusement of a modern city are absent. The peasants are content with simple amusements, and dancing is universally popular. Here are Hungarians dancing the Czardas in a village square.

E.N.A.



THE HUNGARIAN UMBRELLA DANCE

The Hungarian people are passionately fond of music and dancing. Their national dance is the Czardas, which has two movements—the one stately and the other sprightly. It is this alternation of reckless delight with slow melancholy that gives the dance its fascination. The Umbrella dance is a quaint version of it, a quaintness enhanced by the male dress.

E.N.A.

DANCES OF MANY LANDS



A SWEDISH FOLK DANCE

E. N. A.

Folk-dancing is now being revived in many parts of Europe, and societies have been formed to study national folk dances and to give performances. Here, for instance, is a merry Swedish folk dance performed by a group of young people.



WHEN THE DAY'S LABOUR IS DONE

E. N. A.

In the Carpathian mountains, the land of the gipsies, music and dancing are born in the blood. These people are mostly engaged in wood-cutting and cattle-breeding, and the day's work being ended are about to dance to the strains of a fiddle.

DANCES OF MANY LANDS



E.N.A.

IN THE SUNNY FIELDS OF BRITTANY

The Breton peasants cling fast to tradition at their work and play. On special occasions they don their picturesque traditional costume, and young and old join hands to dance the sprightly gavotte—a dance once popular in England.



Associated Press

THE PORTUGUESE STICK DANCE

This strange dance is one of the oldest of folk dances, and until a performance was given in London, had never been seen outside Portugal. The man with the bagpipes is a reminder that this musical instrument is not confined to Scotland.

DANCES OF MANY LANDS



A GIPSY DANCE FROM SUNNY SPAIN

To guitar and castinets, these gypsies of Granada dance the Bolero. Climate has a large effect upon the amusements of nations. Hot countries produce, for instance, leisurely dances, with, perhaps, occasional bursts of rapid movement. In countries such as Russia, however, the severer climate demands almost continual body movement.



THE DANCE OF THE SPANISH WINES

Wide World

When the grape harvest has just been gathered, the peasants of Neuchâtel don their national costumes and perform "The Dance of the Spanish Wines" in the streets. The convivial spirit is inbred in the Latin races, and is seldom copied with any success by the more phlegmatic Northerners, who usually only succeed in making themselves look very ridiculous.



DANCING IN VIEW OF VESUVIUS

G.P.A.

"See Naples and Die" is a fitting tribute to the majestic beauty of this lovely Italian bay, nestling within a mile or so of Vesuvius, the mighty destroyer of cities. These young Neapolitans, however, are full of life, as they dance the Tarantella.

DANCES OF MANY LANDS



Wide World

QUAINT DRESS FOR A QUAINT DANCE

Tradition has certainly survived in this folk dance from Ariège in France. Here are two experts who are about to give a performance for the English Festival of Folk Dancing. Except in parts of the Balkans, however, national costumes are rarely worn unless on festive occasions. Modern industry and commerce appears to have little time for the picturesque.

DANCES OF MANY LANDS



E.N.A.

DANCING IN A COUNTRY LANE

Once again, a wedding is the excuse for the picturesque French scene in Auvergne. The bride and bridegroom having been happily dispatched, these revellers are celebrating the event by dancing "La Bourrée" as they make their homeward way.



RHYTHM ON THE SEA SHORE

The sheer joy of living is expressed in every movement of these Morris Dancers. The movements are designed to recapture the beauty of classical Greece, and to enable the dancer to obtain complete control of her bodily movements.

DANCES OF MANY LANDS



Wide World

ALL TOGETHER IN THE FLORAL DANCE

Great Britain in general, and England in particular, has been slow to maintain her traditional songs and dances. Perhaps the climate is the cause, since it is not conducive to that carefree spirit which characterises folk dances. But in Helston, Cornwall, the inhabitants still dance the Floral Dance, during which they dance up and down the town and in and out the houses.

LITERATURE

OF all the arts, literature in its many forms has the most universal appeal in the world of to-day. The spread of popular education almost everywhere in the civilised world since the last part of the nineteenth century has created this wide reading public, and five hundred years after the discovery of printing we have at last the all-but-universal use of it. Modern printing and binding plants have made possible the publication of well-printed books at a fraction of their previous cost. Whereas a library was once the preserve of the well-to-do, or the only luxury of the poor scholar, industrialism has fortunately made the kingdom of books common property.

The mere figures of book production are staggering. In England alone something approaching 100 per day are issued, quite apart from periodicals and journals. Add to this the production of such great reading communities as America, France, Germany, and the Scandinavian countries, and something of the enormity of the activity of literature in our time will be appreciated.

Apart, too, from actual production there are unmistakable signs pointing to the ever-increasing hold that literature is gaining, in the rapid growth of circulating libraries that are springing up all over the country, and in the statistics published by public libraries and institutes. (It has indeed been observed that one of the effects of the general depression, from which it is hoped the world is now emerging, was to drive people to the simple pleasures to be found in reading and to beneficial study.) Moreover, although one might have thought that literature would have been forced to take a back seat with the advent of the cinema and broadcasting, the reverse has actually happened, and these two new media seem actually to have stimulated popular interest in literature, since sales have increased.

World-Tides of Literature

It is not only in this country that we can observe the progress of books. Publishing organisations are working their way around the globe. Travellers may spend most of the year in their Odysseys, scattering books over Africa and India. The motor lorries of travelling libraries will penetrate the Australian Bush. Every year hundreds of thousands of English volumes are exported to Japan—and so the paper chase goes on.

And surely one of the greatest and least-known romances is to be found in the exploits of the

Colporteurs who endure privation and very often danger to carry to non-Christian peoples the world's best-seller—the Bible. The Bible has already been translated into some 665 different languages, and the small army of Colporteurs has distributed as many as seven million copies of the Gospel in a year. It is difficult for us to imagine the ordeal facing the Colporteurs taking the Gospel into unknown and often hostile lands. For not only have they to face the extremes of weather—the heat of the desert and the cold of the Asian mountain ranges—but, as their work is in the nature of a secret service, persecution and even martyrdom may prove to be their guerdon.

The Growth of the Press

In this country it would be no exaggeration to say that the majority relies on newspaper and periodicals to supply them with most of their reading matter. Whereas a century ago we were—in Napoleon's phrase—"a nation of shopkeepers," we are now styled on the Continent "a nation of newspaper readers." Undoubtedly the growth of the Press in this country has been the prime influence in the shaping of popular opinion and enlightenment. The interest to which a modern newspaper devotes its columns now covers politics, the arts, sport, the management of the home, in fact, all the activities of its readers of all ages.

With the ever-increasing output of books, the question of censorship becomes more and more significant. Whether it is desirable or not to have the individual's private reading supervised by the State is a problem that cannot be discussed here. But the Censor exists to-day and must be noted in any survey of the present position of literature. In Russia to-day the State surveillance of printed literature is particularly strict. This is understandable when we consider that any political crisis whether it extends for a long or a short period tends toward the suppression of any but fully authorised information. Religious censorship is exemplified in the *Codex Expurgatorius*, a list of ancient and modern works whose sentiments are considered unsuitable for the laity by the hierarchy of the Catholic Church.

Literature v. The Best Seller

Naturally this increased output of literature does not make for the greatest popularity of the finest forms, and poetry, the highest of all forms, tends to lose ground whilst the novel has secured world domination. Poetry suffers from one other limitation in that it is not easily translated. In

LITERATURE

this respect the English-speaking poets stand at a definite advantage, for although such a writer as the Italian D'Annunzio earns our lip service it is only the few outside his country who can truly appreciate his worth. Masfield, the English Poet-laureate, is one of the few best-selling poets, and he also enjoys something of an internationally popular reputation.

We are now confronted by the paradox which lies behind all literature: that the few men with great reputation do not necessarily have very large sales. Each new book from such writers may be widely reviewed in the intellectual press of the world, but their actual readers are comparatively few. Lasting reputations in all forms of literature are nevertheless built up thus. In considering world literature, therefore, we have to reckon with literary as opposed to popular reputation. A few fortunate authors, such as Emil Ludwig of Germany, or André Maurois of France in biography; Galsworthy or Thomas Mann, Merejkowsky or Maxim Gorki, and some others in the novel—achieved both. To be known by the man in the street and not despised by the man in the study is, however, a rare fortune. It comes often to the dramatist because the drama is at once both a popular and a literary form, easily understood and appreciated

The Triumph of the Modern Novel

Meantime the novel holds the world in thrall. It is the predominant literary form of our time; its exponents the best paid of all writers. With the passing of John Galsworthy, H. G. Wells holds the foremost place in English letters, his preoccupation with world social affairs uniting his imaginative creation in the production of stories which reveal the broad tendencies of political international movements. Sinclair Lewis shows a similar concern with the ills of his own country. It is a phenomenon of American literature that so many of their popular authors are intensely critical of the prevalent philosophy of materialism and success which dominates their country. In this respect it is interesting to remember that critical writing which tends to question established values often evokes popular and literary acclaim. It is evidently part of the business of literature to make mankind ask whether the new ideas are desirable ways of life.

The overwhelming mass of novels are still concerned with personal problems, often problems of sex or its romantic equivalent. A phase of popular literature in almost every country in the world of recent years has been the spate of crime stories, detective stories, and "thrillers." These, a kind of reaction from the sameness of ordinary civilised life, are calculated to

provide amusement amongst all classes of readers.

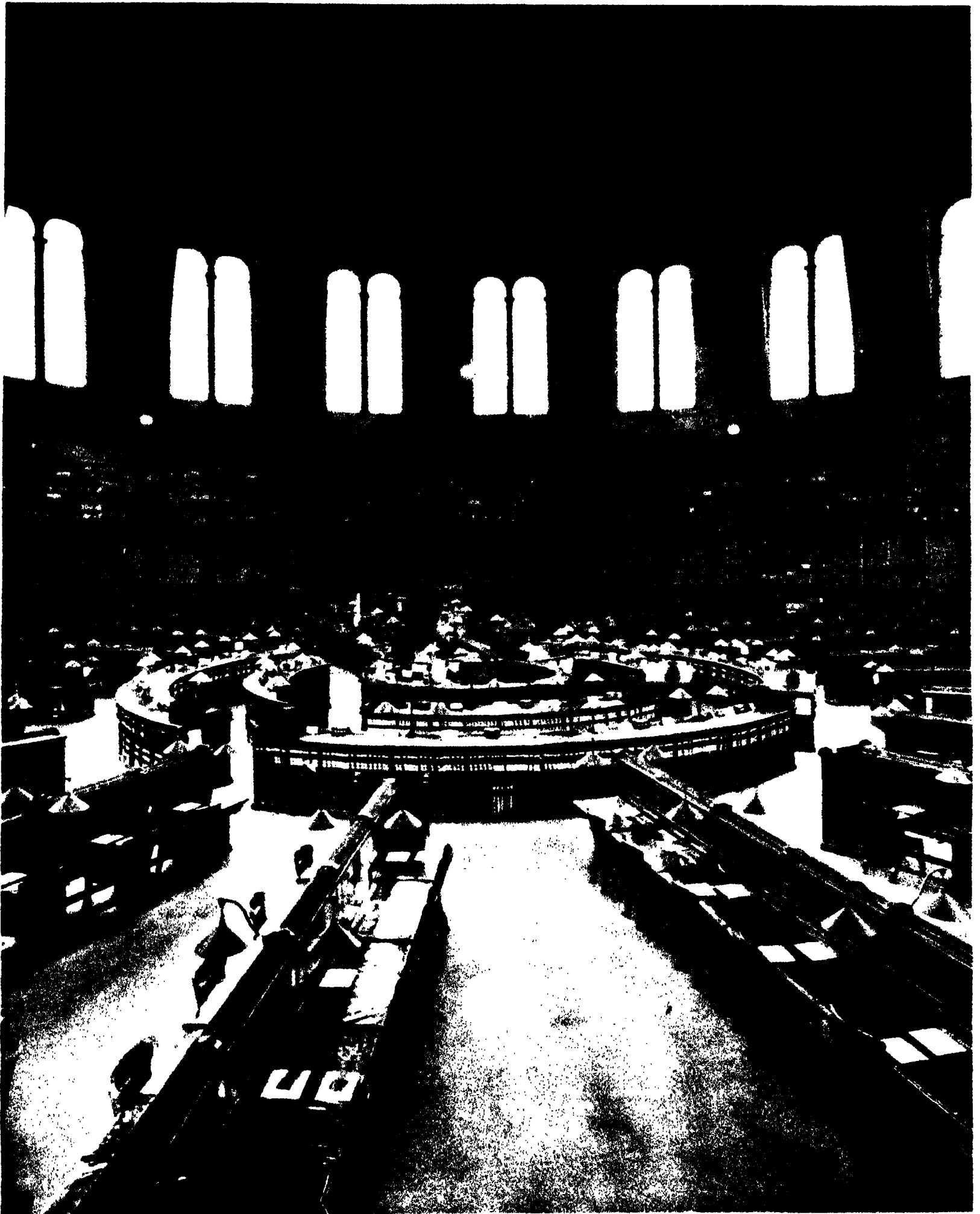
One of the tendencies of current literature is the popularity of the woman writer, especially the woman novelist. Her concern with the personal and the emotional gives her great power in this department; and as women are preponderantly the novel-reading public, the woman novelist is a vital force. Frau Vicky Baum's "Grand Hotel" marks an interesting post-war tendency in fiction, that of cutting across a section of life and by writing of a street, a hotel, a liner, showing society in its interwoven complexity.

Amongst this vast body of straight-forward writing a small group of writers such as James Joyce, Gertrude Stein, etc., are "pioneering" in new forms. As writers of this type represent the left wing, their contribution is worth watching although it is a tiny portion of the whole mass of writing, since it undoubtedly has had and may have in the future a great influence upon more popular writers.

One form of literature which has come to the fore of late is that of biography. In the hands of its finest exponents, it can claim true creative force, and verges upon the province of the historical novel. Biography and serious studies of the problems of world politics and world economics stand at the front of general literature and have an ever increasing popularity. Truth, after all, is stranger than fiction, and the exigencies of our present age may well induce readers to study recorded facts in addition to their usual recreation with novels.

In the inter-relationship of modern life, contemporary political movements necessarily intervene. The Nazi movement in Germany has exiled a number of Jewish writers; the Bolshevik regime a number of Russians; and the modernist movements in such countries as Turkey and Persia are bringing into being a new nationalist literature. Another important division across world literature arises from the new cult of avowedly proletarian writing, a literature devoted to the cause of the masses.

On the whole, however, the movement of literature is one of slow evolution. A little more daring in its realism, a little more violence (both being legacies of the war and the war novels); a little more subtlety in psychology as science opens up new tracts; a little more fluidity in its construction as the cinema induces us to juggle with space and time. But life and love and death, and man's adventurous daring in the world physical or the world of the spirit, remain its infinite subject matter; and the long-set notation of ordinary language remains its varying manner of expression, even in a world of such swiftly changing conditions as we experience to-day.



THE HUB OF THE WORLD'S LEARNING

A huge circular dome inscribed with the names of great men of letters houses the library of the British Museum. Each year a copy of every single book or periodical published in Great Britain must be added by law to the collection within a month of publication. It is the very largest library in the world, and contains nearly three million volumes, which are always available for reference by students. Newspapers are kept in a separate building at Colindale, near Hendon.

LITERATURE



THE MOST SPLENDID LIBRARY IN THE WORLD

E.N.A

Here is a view of one of the rooms of the Vatican Library in Rome, and though no books are visible, it nevertheless contains over 220,000 volumes and manuscripts, including the famous Codex Vaticanus, a great Bible of the Fourth Century contemporary with the Codex Sinaiticus. The Grand Corridor is the largest in the world, being over a fifth of a mile in length.

OXFORD'S WORLD-FAMOUS LIBRARY.

The Bodleian Library at Oxford was re-founded by Sir Thomas Bodley in 1602 and, like the British Museum, has the right to receive a copy of every book published in Great Britain. Its collection of manuscripts is one of the most valuable in existence. With its steadily increasing number of additional books the original building has been enlarged several times, but is still too small to hold the vast collection. Further extensions are now in process to obtain more space.



E.N.A.



Courtesy, Will F. Taylor

FACING MARTYRDOM BY SPREADING THE GOSPEL

To the uttermost ends of the earth travel the Colporteurs bearing the Bible to non-Christian races and facing the ever-present dangers of persecution, torture, and even death. Here is a party of Colporteurs in China carrying their heavy bales over the rough country roads of the Yunnan province. During a year, these Colporteurs cover hundreds of miles.

LITERATURE



HOW A NEWSPAPER IS MADE

News of events from all over the world is gathered by exchanges and transmitted to the tape machine which automatically decodes and types out the message on to a roll of paper.



The news from the tape is collected and sent to the editorial department where it is graded in order of interest and arranged for publication.



The linotype machine works like a typewriter, but instead of making letters on paper it automatically sets up lines of type in metal ready for the foundry. This ingenious time-saving machine has revolutionised newspaper production.

The illustrations meanwhile are photographed by huge cameras on sensitised metal plates from which blocks will be made. This is called the Process Engraving Department.



A mould of papier mâché or flong is made from the assembled type and illustrations. In this mould is cast a curved metal plate which is afterwards fitted to the rotary printing press.

The huge rotary presses are among the mechanical marvels of our age. They are able to turn out 500,000 complete copies of a newspaper, ready printed and folded in an hour.



"Daily Herald" Photographs

LITERATURE



Planet News, Ltd.

NO SHORTAGE OF LITERATURE IN RUSSIA

In Russia to-day the State controls what shall be published in books and papers. In other words, a State censorship exists for all publications. This picture was taken during the celebrations in honour of the tenth anniversary of the State Book Printing Factory. During that period the factory has printed five hundred million books on all possible kinds of subjects.



E.N.A.

TREASURE HUNTING ON THE BANKS OF THE SEINE

In Paris the Left Bank of the Seine has become a synonym for the intellectual and literary quarter. Here may be found the second-hand bookstalls where many a bargain may be picked up by the careful buyer. The picture shows a view of the Quai Malaquais with the Pont du Carrousel in the background. Every kind of book or rare print may be purchased here.

THE THEATRE

THE theatre as we know it to-day may be said to have been born when Greece was evolving out of savagery. The ceremonies in honour of Dionysos—God of Wine—took the form of choral odes sung by a trained chorus dressed as satyrs on a circular space in front of the smoking altar. Later still these odes were developed into acted incidents in the lives of gods or heroes, the altar gave place to a platform raised so that the assembled worshippers would see better, and the first crude outline appeared of what was ultimately to become the classic Greek drama.

By the time that the great dramatists, Aeschylus, Sophocles, etc., were ready to take their place in the development of the drama, the theatre had achieved a proper stage, a circular arena in front for dancing and singing, and permanent scenery built at the back—usually a row of pillars and doors that might represent the interior or exterior of a palace, a temple, or a house.

But already comedies, written for the theatre proper or played in the streets in booths—similar to the pagonds or pageant plays that were to reappear in the Middle Ages—had come into existence, and were the ancestors of the *Commedia dell'Arte*—the Italian comedy that was eventually to join up with the classic drama and give birth to the theatre as we know it to-day.

The Golden Age of the Theatre

During the Dark Ages the theatre—like all forms of culture—was dead and only revived in the Middle Age miracle-plays mentioned above. Their quaint simplicity and humour enlivened the strictly religious element that naturally underlay an art-form that had been re-born only through the influence of the monasteries.

As the years passed, however, the secular forms of drama usurped the religious element; and even before Shakespeare wealthy noblemen had their troupes of “servants” who performed at their houses and toured the neighbouring towns and villages.

The sixteenth century marked an astonishing and never-equalled period of great dramatists. Shakespeare, Ben Johnson, Racine, Molière and countless others are immortal names that flourished in that tremendous time when the world woke from its nightmare of petty wars and

materialistic struggles for power, to the knowledge of poetry, art and the realisation of ideal beauty.

The bright flame of drama thus kindled flared only to dwindle and die down after flickering through the seventeenth and eighteenth centuries in the amusingly vicious or artificially sentimental comedies that reflect their age. In spite of the romantic dreams of German poets like Schiller and Goethe, it was only towards the end of the nineteenth century that this flame revived in the dramas of Sardou and Dumas in France and the popular work of Robertson, Pinero, Granville Barker, and Henry Arthur Jones in England.

The Age of Great Actors

There can be no comparison, of course, between these later writers and their forerunners. But this is due in a large part to the fact that a new force had come into being. The nineteenth century saw the arrival of the individually great actor.

Hitherto, with the exception of Siddons, Garrick, Kean and a few others, actors were a class without many distinctions, ready to play any type of role. Mrs. Siddons was the first great actress—we must remember that all the immortal heroines of Shakespeare and his contemporaries were played by boys—but the nineteenth century was the age of Macready and Irving, of Rachel, Bernhardt and Duse. A great actor could redeem and transform a play that needed no longer to depend on its own merits. And though, of course, great plays were—and are still—being produced, the general level is lower.

Machinery and effects, too, had a far-reaching effect. Melodramas, with races and shipwrecks, real pools of water and real fires, became the fashion and reduced the demand for fine writing still further. This was because the theatre seemed to be intoxicated with its new-found powers. Until comparatively recently the stage was forced to create its illusions with the simplest means. False perspective—whereby the back wall of a stage may be painted to look like a receding street—has been known since Roman times, but is only successful when viewed at right angles. Spectators at the side see only an absurd distortion of reality. There were no other “effects” except a few crude machines for gods to descend from. But with gas and electric-lighting a new world opened to the producer.

THE THEATRE

He could create sunsets finer than Nature's, and with thin steel wires and hydraulic engines above and below his stage he could work miracles of illusion.

Nowadays, however, the theatre has grown accustomed to its new electric lighting that can alter colours and costumes in the click of a switch; its revolving stage that can change a scene weighing many tons in as many seconds; its atmospheric effects of rain, fog, or storm. A reaction has set in towards the play itself. Shaw and Galsworthy have helped to popularise the "play of ideas" which requires very simple settings and creates atmosphere by its essentially dramatic situations. Mechanical effects are now mostly used for "spectacles," which deliberately take every advantage of the scope thus offered to them and in the hands of such producers as Reinhardt achieve great heights of beauty and magnificence.

Another important development of the drama to-day is what may be called "The Little Theatre" Movement, which may be discussed in company with the provincial repertory theatres. Their increase seems to indicate conclusively that the love of the theatre is still strong, in spite of broadcasting and the cinema.

All over Europe and America small theatres are springing up to perform plays of every kind, and especially to introduce the plays of one country to another. Often these theatres have no money to acquire expensive lighting sets or scenery; but they nevertheless manage to give convincing representations with the means at their disposal of a surprisingly large and varied number of plays.

The Repertory Theatre

The repertory theatres carry on the good work on a more ambitious scale. The larger companies in the provincial cities of Britain often produce new works that afterwards achieve great success in London. The most famous of these, the Birmingham Repertory Theatre, under Sir Barry Jackson, has had the honour not only of producing world successes for the first time (such as Shaw's *Back to Methuselah*), but also of being the training ground where many famous actors have learnt the rudiments of their art.

In addition, no outline of the theatre, in this country at least, is complete without a reference to the incalculably valuable work done by Miss

Nancy Price and Miss Lilian Baylis in England; the former in starting the production of cheap-seat plays, and the latter in finding a permanent London home for the plays of Shakespeare, opera and ballet at the Old Vic. and Sadler's Wells.

The Theatre of the People

Of all theatregoers the Russian people are the most enthusiastic in the world. Every form of dramatic art has been patronised by all and sundry since long before the Revolution, and to-day, under Soviet rule, still holds a high place in their affections. Russia is a nation of dancers, and the Imperial Russian Ballet was once the finest ever seen. But it was directly supported by the Czar and the Court; and though Diaghlieff, its producer, was able to transfer his company to France and there sustain performances of unequalled brilliance, its glories faded when the Emperor fell, and diminished still further after the death of Diaghlieff.

The theatre, however, remained. And the Moscow Art Theatre continues to play to crowded houses and is now a centre of experiment where the very newest ideas in stage craft are tried out long before they are adopted by the rest of the world. Operas and ballets are, of course, performed as well, but the Soviet Union has yet to produce a Chaliapin, a Pavlova or a Nijinsky.

Elsewhere than in Western Europe, Russia and America the drama is almost where it was. The ritual No plays of Japan are produced in exactly the same way that they were done 300 years ago. The imitative actors of Africa and South America still go through the standard motions that their remote ancestors did. While, in outlying middle and northern European countries, and even in remoter parts of England, France and Germany, simple miracle-plays and legends of the saints are still performed.

These, under the influence of the cinema, are fast dying out; and though the theatre will always remain a healthy individual art, it is undoubtedly to some extent under the influence of the "silver screen" to-day. It is certain, however, that the theatre will develop further and further along a path that will distinguish it in thought and technique from the talkies, though retaining the vital stimulation induced by its recent contact.



CHRISTMAS WAITS READY FOR THE PLAY

These players go round the villages in the Carpathian Mountains at Christmas performing a traditional Christmas play about the conversion of the heathen. It is similar to the play of St. George which used to be played regularly by English villagers at Christmas in country districts. This is a survival from the "miracle" or "morality" plays of the Middle Ages.



Wide World

STROLLING PLAYERS OF CHINA

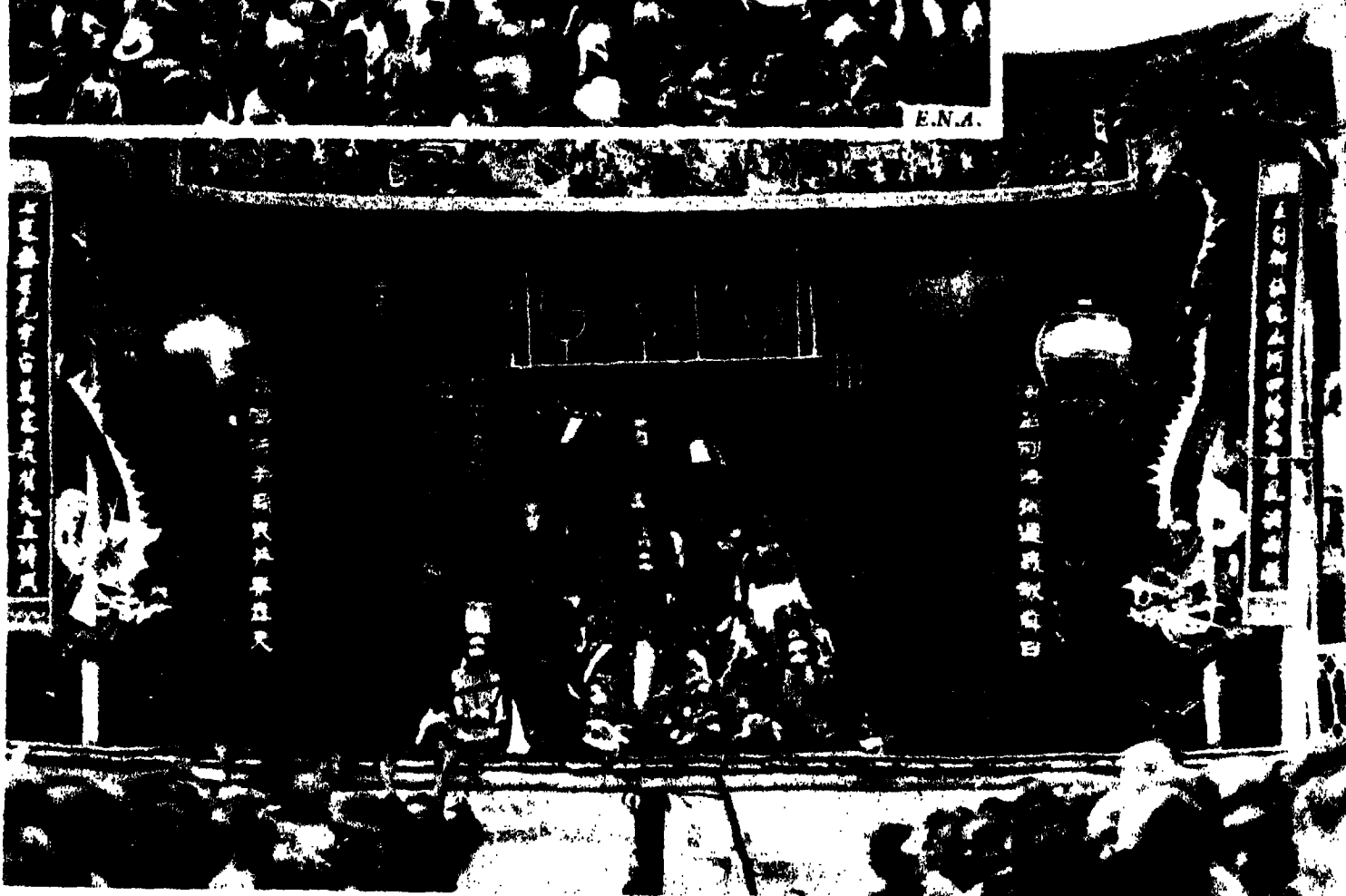
Besides the conventional Chinese theatres, there are also bands of strolling players who perform in the street with a minimum of make-up and the simplest of costumes. They usually sing old ballads to an accompaniment of bamboo castanets or clappers, imitating the actions of the characters in their song. Note the shadows of their audience on the left.

THE THEATRE



"THE PLAY'S THE THING"

The great Dragon King Fair is held once a year in the town of Likang, and at this time the merchants of the town employ Chinese actors to present performances in the open air theatre. A performance is here in progress before the large audience, who are charged no admission, and who do not seem to mind the long stand.



AT THE THEATRE IN SINGAPORE

There is a large number of Chinese amongst the population of Singapore, the British naval base, and these gorgeously arrayed players are performing in the Chinese theatre. The oriental love of display is very evident, not only in the costumes of the players, but in the whole design of the stage. Facial expression is conventionalised by the use of mask-like make-up.



E.N.A.

THE THEATRE IN THE LAND OF THE CHERRY BLOSSOM

Legends and religion play an important part in the Japanese theatre even to-day, many plays performed being four or five hundred years old. At one time the profession was hereditary, and, as in England, women's parts were always taken by men.

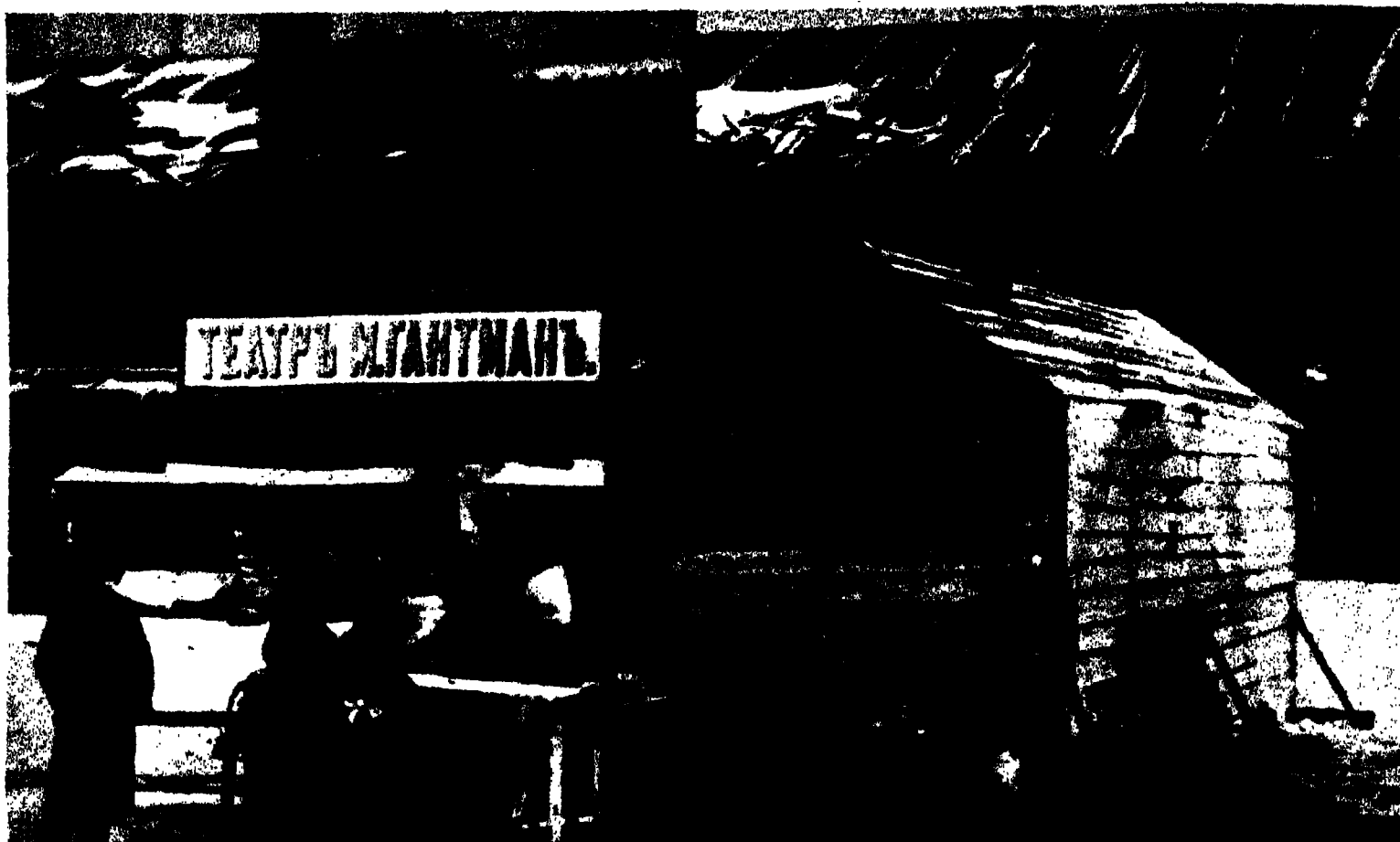


E.N.A.

BEHIND THE SCENES AT A JAVANESE PUPPET SHOW

The delicate semi-transparent puppets of Java are a popular entertainment there. They are worked by wires from below and the shadows of their jerky movements are thrown upon a screen to the sound of the orchestra or "gamelang."

THE THEATRE



E.N.A.

A WOODEN THEATRE IN NISHNI NOVGOROD

The theatre seen at the back of the picture is in a fair ground in the town of Nishni Novgorod, in the South of Russia, and which is famous as a market town. The peasants in the front of the picture are gathered round a samovar—the Russian tea-pot. Notice the old-fashioned poster advertising the "Big Scene" of the play. Nishni Novgorod is now called Gorki.



E.N.A.

A TOURING COMPANY IN SOVIET RUSSIA

The theatre has always been a favourite and successful means of spreading propaganda. In this picture the members of the dramatic society of a Soviet factory are about to give a performance in a Siberian village. They are given special leave of absence so that they may spread Soviet doctrine by playing propaganda plays in the most remote parts of the country.

"ST. JOAN" AS A POLITICAL SATIRE

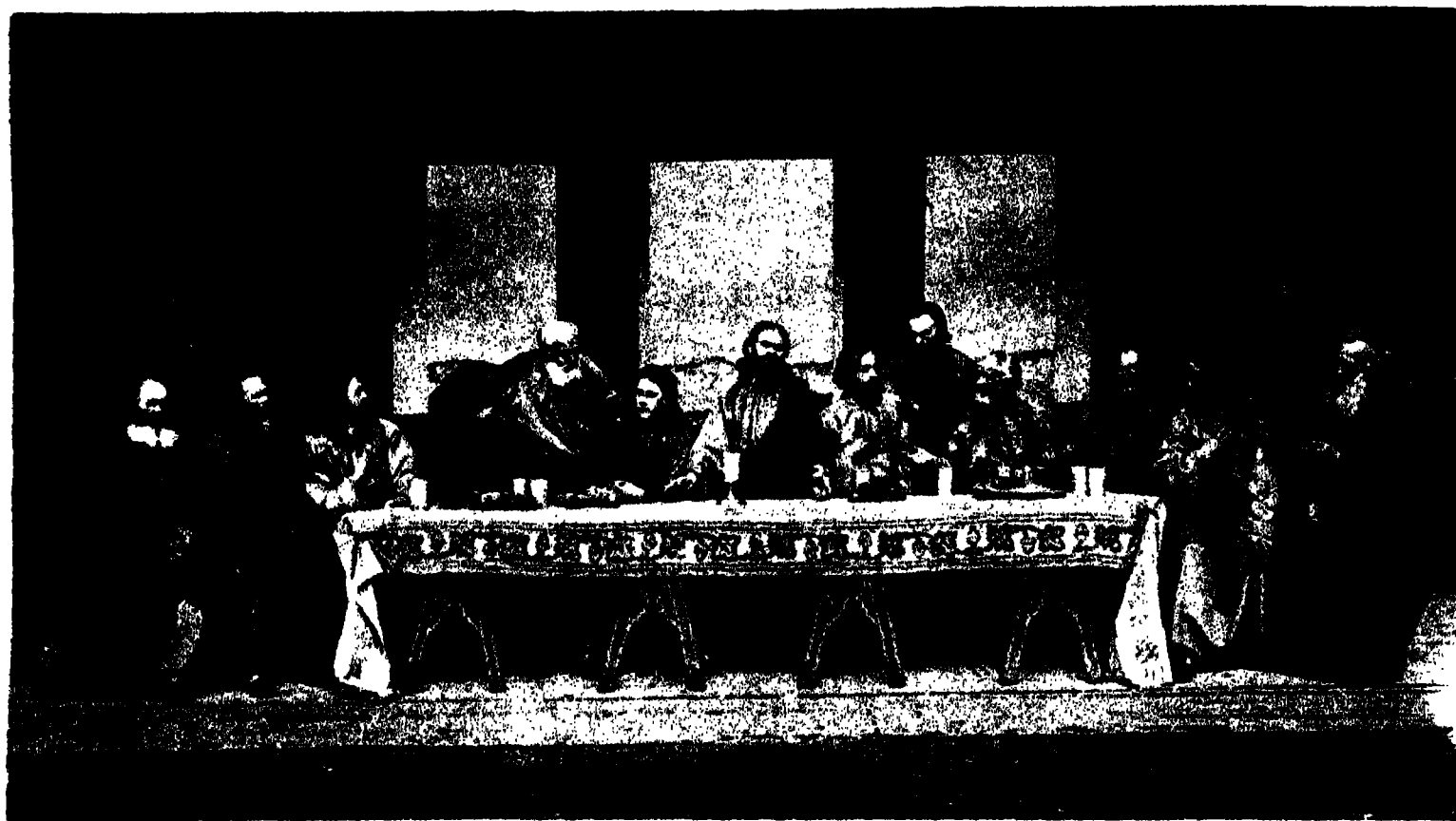
The interpretation of the producer may alter the whole effect of a play. This is Moscow's version of Shaw's play, *Saint Joan*. Joan, the sturdy wench of the people, is purposely made a striking contrast to the Dauphin—the member of the aristocracy—who is deliberately made ludicrous to the point of imbecility.



A STRIKING CONTRAST—THE ENGLISH "ST. JOAN"

A beautiful picture of Dame Sybil Thorndike in the part of Joan of Domrémy. The English rendering of the part has all the virility of the Russian Joan, and adds to it a spiritual quality which the Russian version deliberately lacks. This picture indicates the effect of depth and mystery a clever producer with careful lighting can give to even a small stage.

THE THEATRE



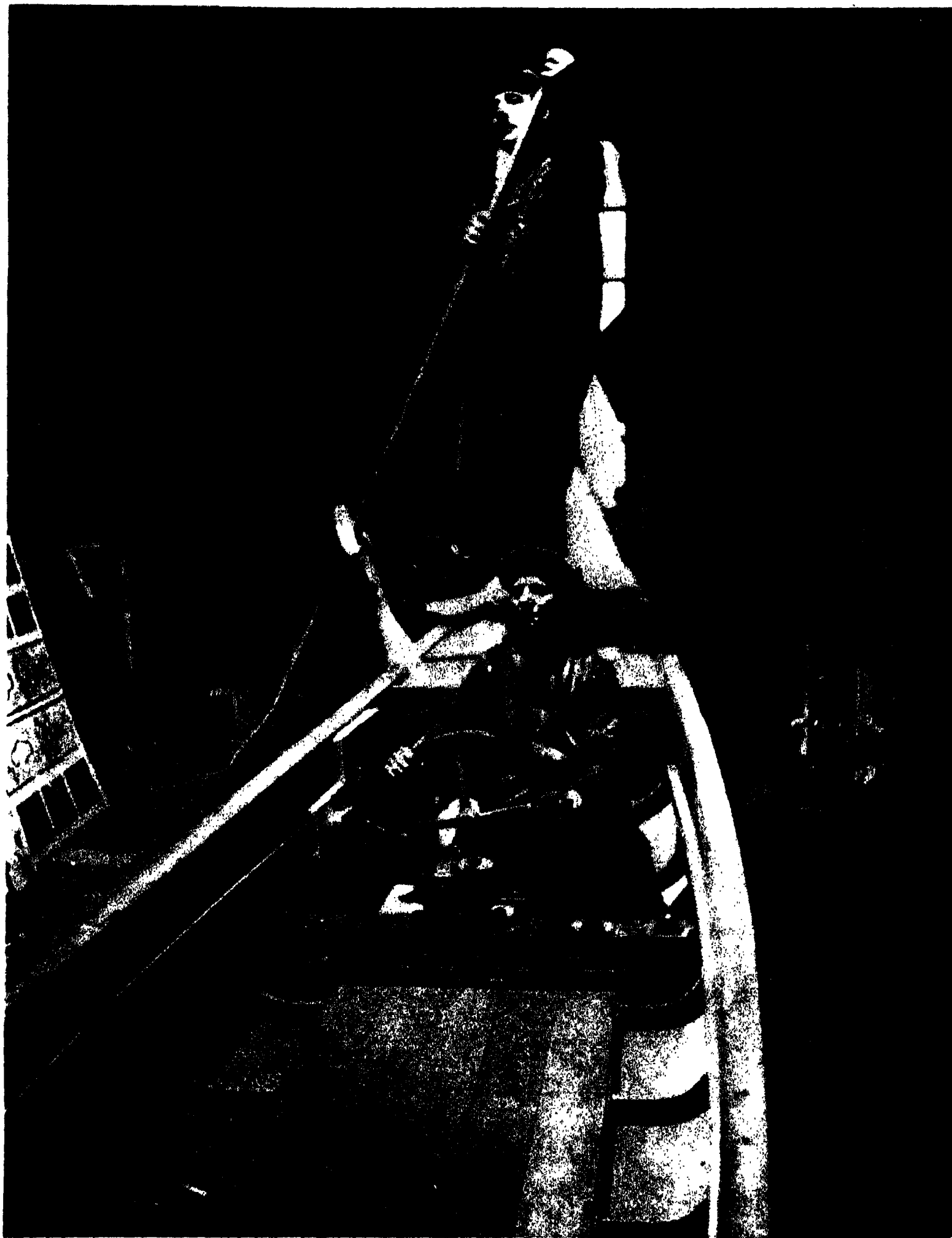
THE BEAUTIFUL ART OF THE VILLAGERS OF OBERAMMERGAU

The simple villagers take the parts of Christ and his disciples, and the costumes and stage settings are made in the village. Though this presentation of *The Passion Play* is simple to the point of austerity, it draws audiences from all over the world. The grouping of the Last Supper is taken from Leonardo Da Vinci's famous fresco. The play is performed every ten years.



IN THE VILLAGE OF OBERAMMERGAU

The stress of modern life in the city of to-day is unknown in this peaceful German village. It is one of the world's backwaters, and in houses such as these the humble players in the *Passion Play* spend their uneventful lives. The shops and houses have gaily painted walls, some of which are very old and have little connection with the goods for sale below.



REHEARSING THE EFFECT

Wide World

Few of us realise the thought and care that goes to make even the simplest "effect" on the stage function perfectly night after night. The world-famous German producer, Professor Max Reinhardt, is noted for his very thorough rehearsals. Every tiny detail is worked out and nothing is left to chance. This photograph shows how the gondola in Act II of *The Tales of Hoffmann* is made to drift across the stage during the famous Barcarolle, "Night of Stars and Night of Love."

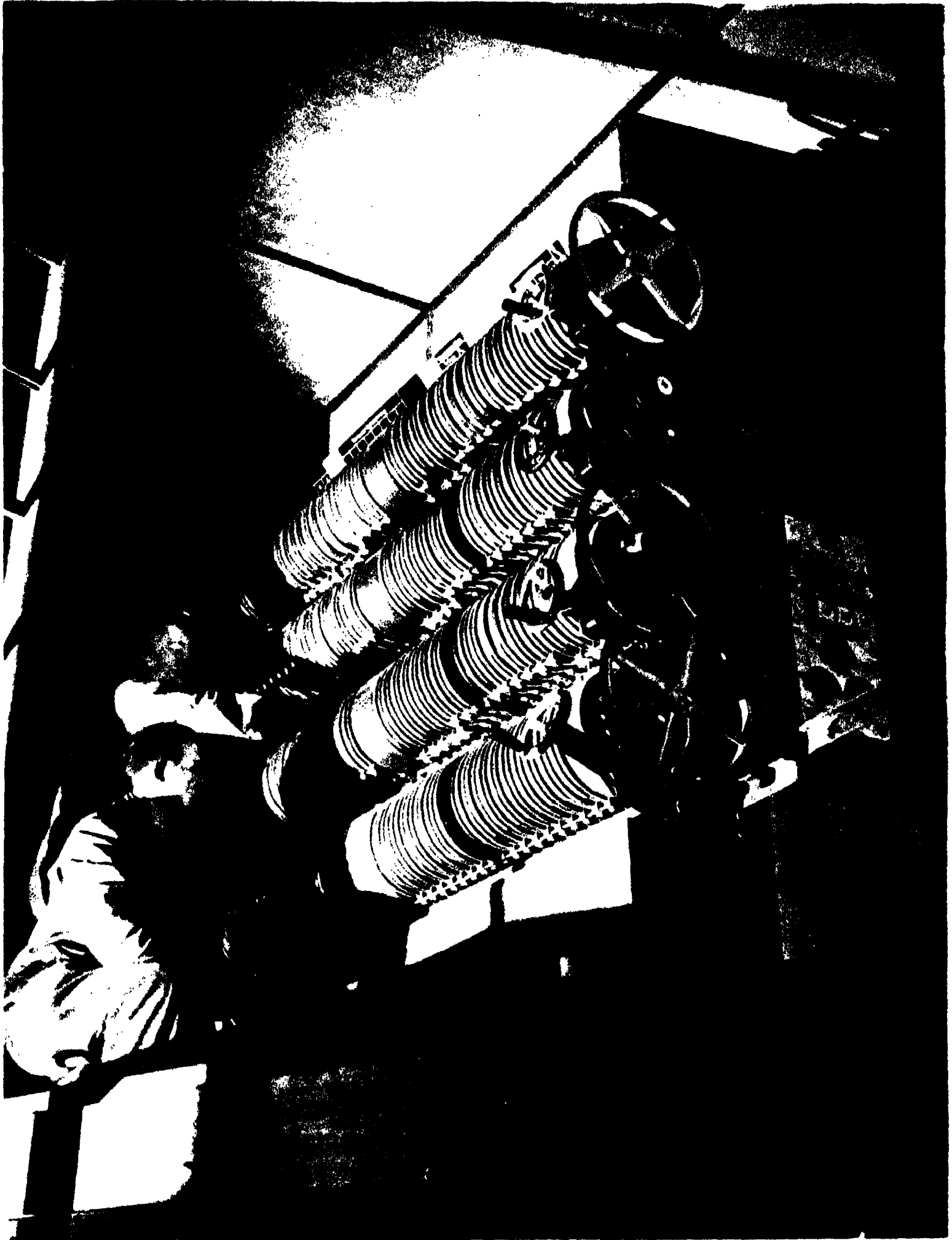
THE THEATRE



THE WONDER THEATRE OF BAYREUTH

Wide World

The huge stage of the Richard Wagner Theatre in Bayreuth was built specially to accommodate his operas, which require effects that ordinary theatres cannot supply. This view is from "the flies"—the huge loft where the scenery is hung above the stage. *Inset*: A technical marvel in theatrical production—an apparatus for producing cloud and lightning effects.



A CAPTAIN'S BRIDGE ON LAND

Wide World

The lighting bridge of the Richard Wagner Theatre, with over a hundred levers for regulating the light. There is no other composer in the world who has a theatre devoted solely to the production of his works, and Germany is justly proud of this achievement. Until her death, the theatre was managed by Wagner's widow; his son, Siegfried, being permanent conductor.

THE THEATRE



Wide World

SCENE-SHIFTING IN THE WORLD'S ONLY OPEN AIR OPERA HOUSE

In Zoppot, in the free state of Dantzig, exists a marvellous open-air opera house, to which audiences gladly travel thousands of miles. The greatest singers, orchestral players and conductors in the world esteem it an honour to perform at Zoppot—and the town has been called the "Northern Bayreuth." Opera is granted a subsidy by the state in Germany



ONE OF THE LARGEST STAGES IN THE WORLD

Scene setting on the stage on the London Coliseum, where some outstanding theatrical spectacles have been presented. Its revolving stage was the first to be installed in a British theatre, long before any of the others.



BELOW THE REVOLVING STAGE

By this means several scenes can be set and the stage revolved as each is needed. Thus the tedious waits involved while elaborate scenery is changed have been eliminated. *Above:* The main switchboard and the revolving stage control.

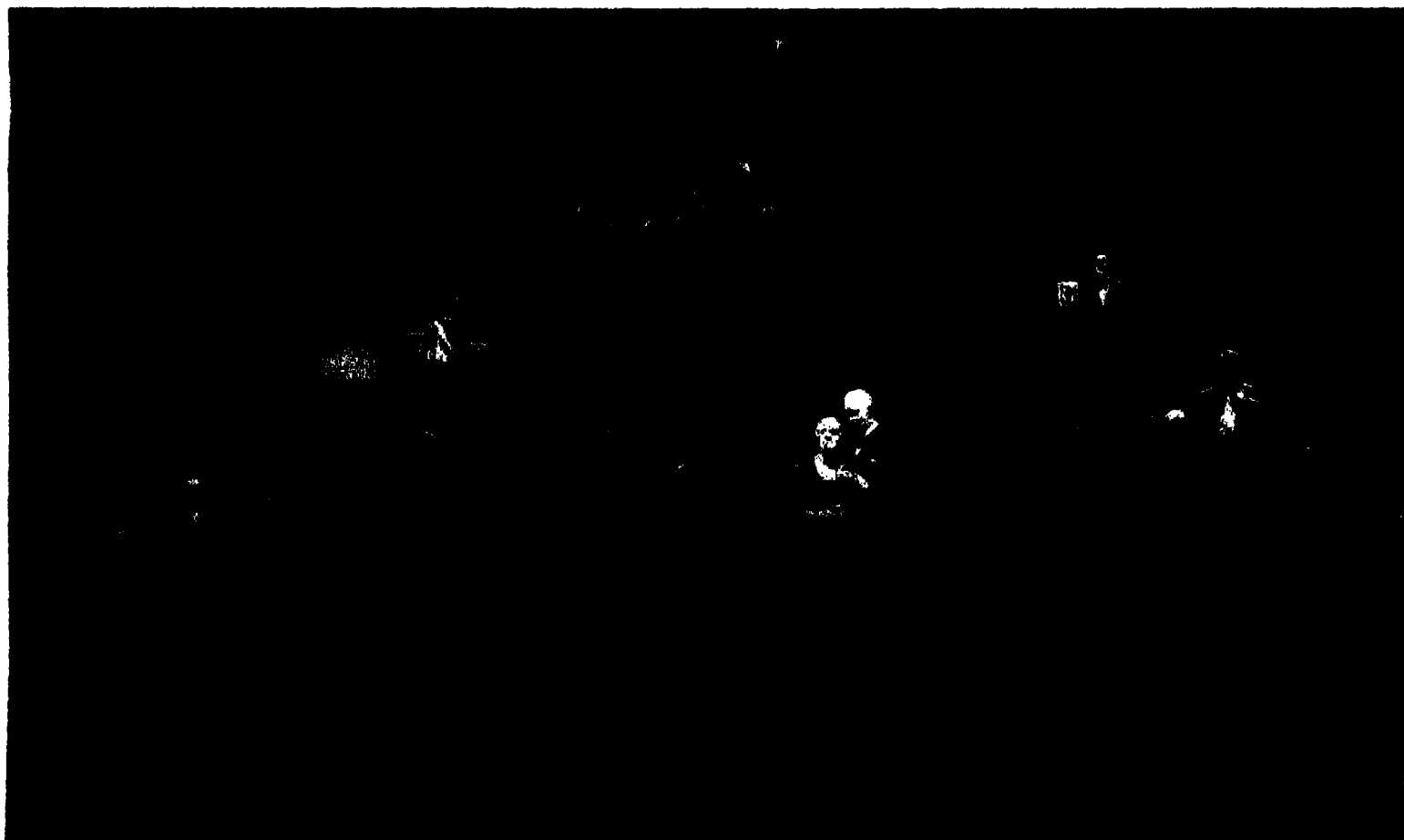
THE THEATRE



Stage Photo Co.

THE THEATRE AT ITS MOST ELABORATE

A scene from a Drury Lane musical play, which utilises almost the whole of this theatre's huge stage. Compare this elaborate production with the simple theatres depicted earlier in this section—the Christmas players in the Carpathians, the strolling Chinese players, and the *Passion Play* at Oberammergau. Drury Lane has long been famous for its spectacular productions.



Stage Photo Co.

WHEN THE THEATRE BORROWS FROM THE CINEMA

A novel effect from Noel Coward's play, *Cavalcade*. A number of representative incidents from the play were finally grouped on a darkened stage, and a spotlight flashed first on one scene and then on another. The chaotic uncertainty and hectic pressure of modern life were most effectively portrayed by this method, which is obviously derived from the cinema.

THE CINEMA

PERHAPS one of the most striking features of present-day life is the ease—the almost too great ease some people contend—with which we can get entertainment. And of all the means of amusing ourselves that are offered for our choice, none is more popular than that which the cinema presents. “Going to the pictures” has become for many people not merely an entertainment but a habit—a habit universally indulged in by rich and poor, wise and foolish, that has left its mark on the everyday life, the fashions and even the conversation of nations.

The Universal Influence of the Cinema

“Talkies” of national appeal are made by practically every European country—France, Germany, Russia, Italy, Austria, Sweden, Portugal, and Czechoslovakia. All have their production units, and some of their films are of exceptionally high quality and obtain an international showing. But the majority of ordinary feature films is still made in Hollywood, and these form a large percentage of screen entertainment both here and abroad. The result of this has been to popularise American slang, and standardise feminine appearance, all over Europe. At no other time have people looked so much alike and talked so much alike. Even women’s clothes are frequently copies of this week’s movie model, with the result that women are better groomed than they have ever been—particularly those with little money to spend on dress—and at the same time so standardised as perhaps to become uninteresting.

Further East the influence of the talkies is not quite so marked, although it is at work. In Japan, where kissing has always been considered a disgusting and immoral habit, the screen kiss is slowly having its effect, and both there and in China the cinema is largely responsible for the Westernisation of clothes. But the slang has not yet penetrated further than the large towns in the quarters where English and Americans predominate. In the smaller cinemas pictures are all played silent, while the interpreter or *benshi* explains the action with a wealth of detail, which is listened to with deep appreciation by

an audience of enthusiastic and emotional “fans.”

Japan, China and India all have their native film productions, which enjoy a good deal of home popularity but seldom find their way over to Europe, where most audiences like their film fare a little more sophisticated.

It seems difficult to remember that talkies, on anything but an experimental scale, have been in existence less than ten years. Before then Hollywood enjoyed complete supremacy in the world of film making, but their advent put the dying British film industry on its feet again, and now we have talkie studios and equipment here as fine as any in the world. Around Elstree, where some of our biggest studios have been built, a regular film town has sprung up, inhabited mainly by people employed in various branches of the movie business, and by others who earn their living by catering for their various wants. Then there are the up-to-date new studios at Ealing, Shepherd’s Bush, Wembley, Twickenham, Islington, and Denham.

Actual production methods and equipment are more or less the same on both sides of the Atlantic, and although there are numerous patented sound systems in use, they differ very little from each other in the main principles. In fact, the technical side of most films—even those that are really poor from an entertainment point of view—is nowadays of so generally high a standard that it is rare to find, as one frequently did in the old days of silent films, an ill-lit, badly photographed and badly synchronised picture.

How a Film is Made

The amount of intelligent and skilled work necessary for the production of a film is considerable. First of all a good, screenable story must be decided on—a difficult task, to judge by much of the poor story material that finds its way to the screen! This is given to the scenarist, who writes it up in the form in which it will be screened. Sometimes the story is re-written round the personality of some well-known star for whom it has been bought, and the places of minor characters filled by the casting director, whose office is lined with files containing the names, photos and records of work (if any) of

THE CINEMA

aspirants to film fame. Locations are then chosen (sometimes the production staff and chief players have to go for several weeks to some foreign country to "shoot" or take these), orders are given for sets for all scenes that can be shot in the studio to be built in the carpenters' and plasterers' workshops. Finally, when everything has been approved by studio executives in charge of the production side, and by the director, if he is important enough to have a big say in the matter, the film is ready to be shot. The actual time for shooting an average film is between six and eight weeks, and the production costs about £50,000. A camera man and assistant, a sound camera crew (both cameras are worked by separate units, but they are run on twin motors that ensure perfect synchronisation of sound and sight), lighting experts, a director, an assistant director, script girls who sit with the scenario and follow every scrap of the action from day to day, and whose duty it is to spot any small discrepancies that may occur, are just a few of the studio staff whose salaries help to absorb that fifty thousand. Then, of course, there are all the carpenters, the make-up men, and the artistes themselves to take their share, and the cost of building sets and making costumes is a considerable item, not to mention expense incurred from the vast quantity of electricity needed for running the powerful lights.

The World's News on the Screen

Perhaps one of the best things the cinema has done for us is to bring distant countries and people fascinatingly close to us. Pictures of Africa and its inhabitants, human and animal, Greenland with its Eskimos and polar bears, and all sorts of strange and out-of-the-way corners of the earth made suddenly enthrallingly real, probably have as popular an appeal as most types of picture, and it is for this reason that the Newsreel plays its part in every movie programme. Newsreel photographers operate all over the world, and are perpetually gathering news pictures that find their way in an incredibly short space of time to the world's screens.

The organisation of news films, for instance, presents an example of an absolutely world wide activity. The big organisations maintain fleets of sound trucks and aeroplanes. Paramount News

trucks, for example, are sent from branch offices in Japan and China to get pictures all over the East, and from Paris, Berlin and London all over Europe. The head offices are equipped with "tape machines" and men whose duty it is to look out news of forthcoming events, arrange film interviews with important people, and make speedy arrangements for the truck crews to record the various stories while they are news.

Colour Films

Since the earliest days of cinematography the aim has been the presentation of moving pictures in natural colours. First came the accurate reproduction in monochrome in the perfected still photograph. Then the addition of the illusion of movement and the rise of the art of the motion picture. Following this the reproduction of synchronised sound accompaniment—the talking films.

For about twenty-five years the studios of England, America, and the Continent have been experimenting with colour, trying to arrive at a system that would be as near perfect as possible in the reproduction of natural colours and economic to produce.

Since Charles Urban, in 1912, produced his celebrated film of the Delhi Durbar, there have been numerous systems invented, some like Urban's kinemacolor separating the primary colours in camera work and joining them in projection. Some firms even resorted to hand tinting.

Technicolor, which is used for the Walt Disney cartoons, and is the most highly developed process, is an outcome of the three-colour system, which employs three rolls of film photographed simultaneously, as against the two formerly used. In this way the three primary colours, red, yellow, and blue, are blended in such a way as to give a three-dimensional effect.

Other systems cover the back and front of the celluloid strip with different coatings of film, the black coating carrying the colour separation.

By far the bigger majority of the systems have been additive—that is to say, the colour is incorporated in the film itself.

Colour films are now here to stay, but will not come with a rush like talkies, because the problems to be solved are artistic, not mechanical.

One of the most interesting problems of the colour is the effect it will have on the popularity of stars. Like the coming of talkies, it will probably make some and break others.

After colour there remains only one further problem in cinematography to be solved—the creation of the illusion of depth, of stereoscopic vision of our normal visual experience of three-dimensional space.

E. ELIZABETH KERR

THE CINEMA



E.N.A.

THE ALL-CONQUERING MOVIE IN CHINA

Just as silent films are still shown in outlying parts of this country so, in China, the forerunner of silent films performs in the open. This street cinema is hardly more than an animated peepshow; yet it attracts an enthusiastic juvenile audience.



E.N.A.

QUEUEING UP FOR THE CINEMA IN MALAYA

The responsibility of those who control the cinema industry is clearly seen when films percolate to native races. What, for instance, will be the effect of sophisticated comedies of society on the minds of the natives? There is so little in common between the two types of culture that much damage may be done unless the importation of films is strictly regulated.

THE CINEMA



Courtesy, British International Pictures

ANYTHING FROM A PIN TO A PAGODA

The property department is responsible for dressing the "sets." They can supply any article from a pin to a motor-car, and if it happens that an article is not in store or cannot be bought, they make it—usually from wood, plaster or gelatine.



Courtesy, British International Pictures

WHERE THE SCENERY IS MADE

Full-sized sets are then built by skilled workmen in the set construction workshop. These have to be sound-proof, and a material called "scrim" and plaster on a wood basis are usually used, though this is not so vital in sound-proof studios.



Courtesy, British International Pictures

AN IMITATION AS REALISTIC AS THE ORIGINAL

As many scenes as possible are taken in the studios, to save time and money, and also because it is easier to get the lighting and sound effects in a properly equipped studio. Sets like this realistic butcher's shop are built speedily and accurately.



Courtesy, Columbia Pictures

THE BLINDING ARC LIGHTS OF THE STUDIO

The equipment of a modern talkie studio is costly and complicated. Cameras and sound cameras are run by electricity off twin motors, so that perfect synchronisation is ensured. The enormous arc lamps accentuate every physical defect.

THE CINEMA



Courtesy, British International Pictures

AN ARTISTIC DECEPTION

Sometimes whole villages are built in the studio grounds. They are solid-looking from the outside, but their fronts are usually only imposing looking shells. It is difficult to believe that this village street, built at Elstree, is anything but genuine.



Fox Photos

---AND A STERN REALITY

But occasionally producers prefer the atmosphere of the real thing, and it is often easier, too, if really accurate scenes are wanted for a film dealing with some branch of industry, to shoot them on the spot. This is a scene in a real steelworks.



ROMANCE UNDER DIFFICULTIES

Courtesy, Columbia Pictures

Under a battery of lights and cameras, with script girls, cameramen, and engineers all gathered round, a microphone above and a director giving instructions, the chief actors in a love scene do not find it nearly so exciting as it looks on the screen.

THE CINEMA



A FAKE FIESTA

Courtesy, British International Pictures

In fact, if you saw half the scenes that look so romantic on the screen in course of production, you might be very disappointed, although you could not help but admire the ingenuity of such realism. A gay crowd scene in a Spanish fiesta—picturesquely clad revellers driving through showers of sweetly-scented flower petals—may look like this in the studio!

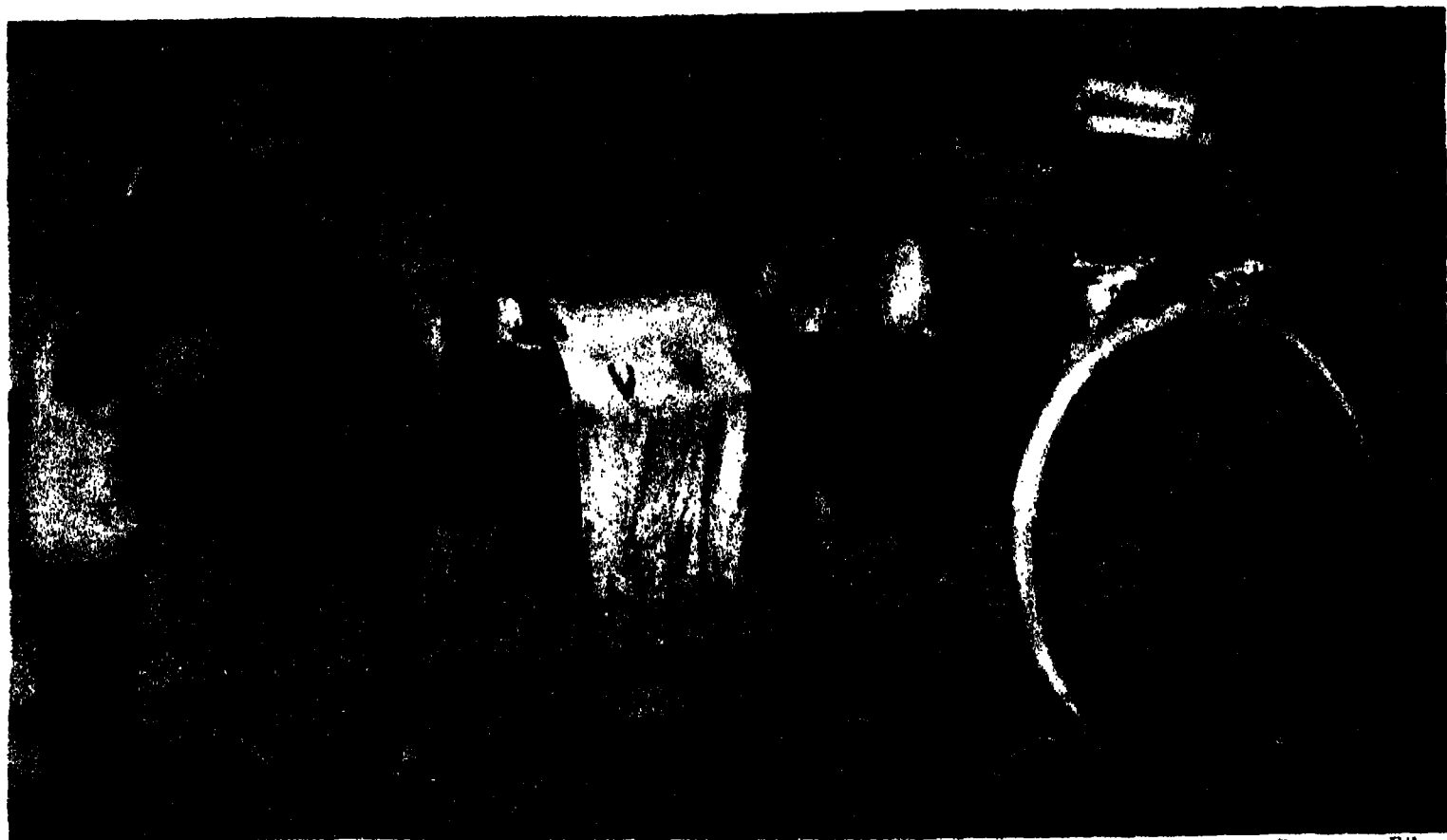


Courtesy, Paramount Films

PALACES OF PLEASURE FOR THE PEOPLE

The last process of film-making of every kind—whether ordinary feature films, cartoons or newsreel—is editing and cutting. The most up-to-date way of doing this is with the aid of a moviola. The film is run behind a lens which magnifies the picture and reproduces the action on a miniature screen. At last the film is ready to be shown, in such cinemas as this.

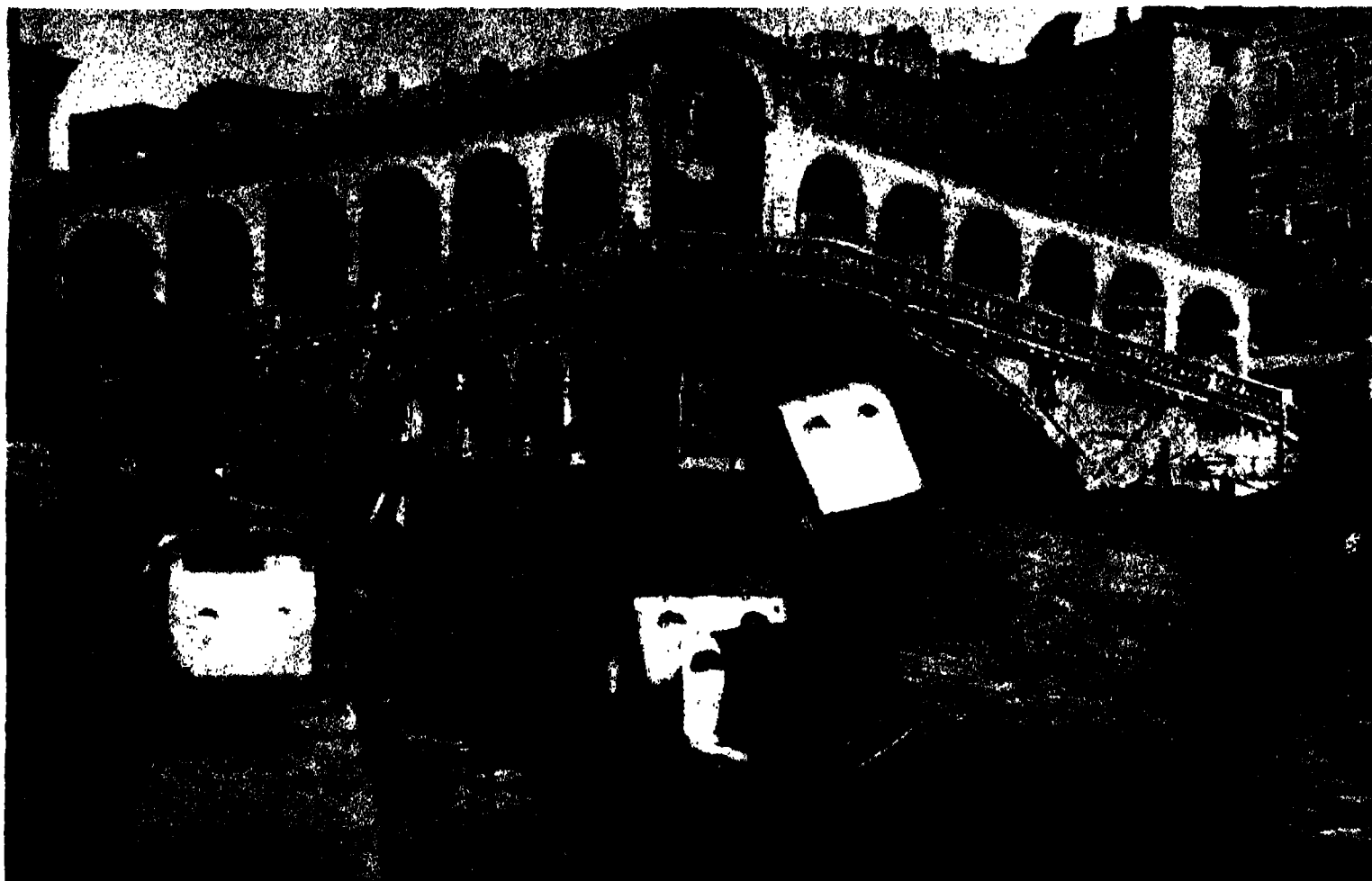
THE CINEMA



Courtesy, Paramount Films

ANCIENT TRANSPORT FOR THE NEWEST FILMS

Prints of each film made are sent by the distributor to countries where the film has branch offices, and these are hired out. Methods of conveying them to cinemas are often very picturesque, as can be seen from this picture taken in Sicily.



E.N.A.

ROMANCE IS BORNE ALONG ROMANTIC WATERWAYS

In Venice the films have naturally to be transported by gondola. Through the most romantic of European cities, down the Grand Canal, and under the famous Rialto bridge floats a gondola freighted with romance itself—a cargo of visions.

BROADCASTING

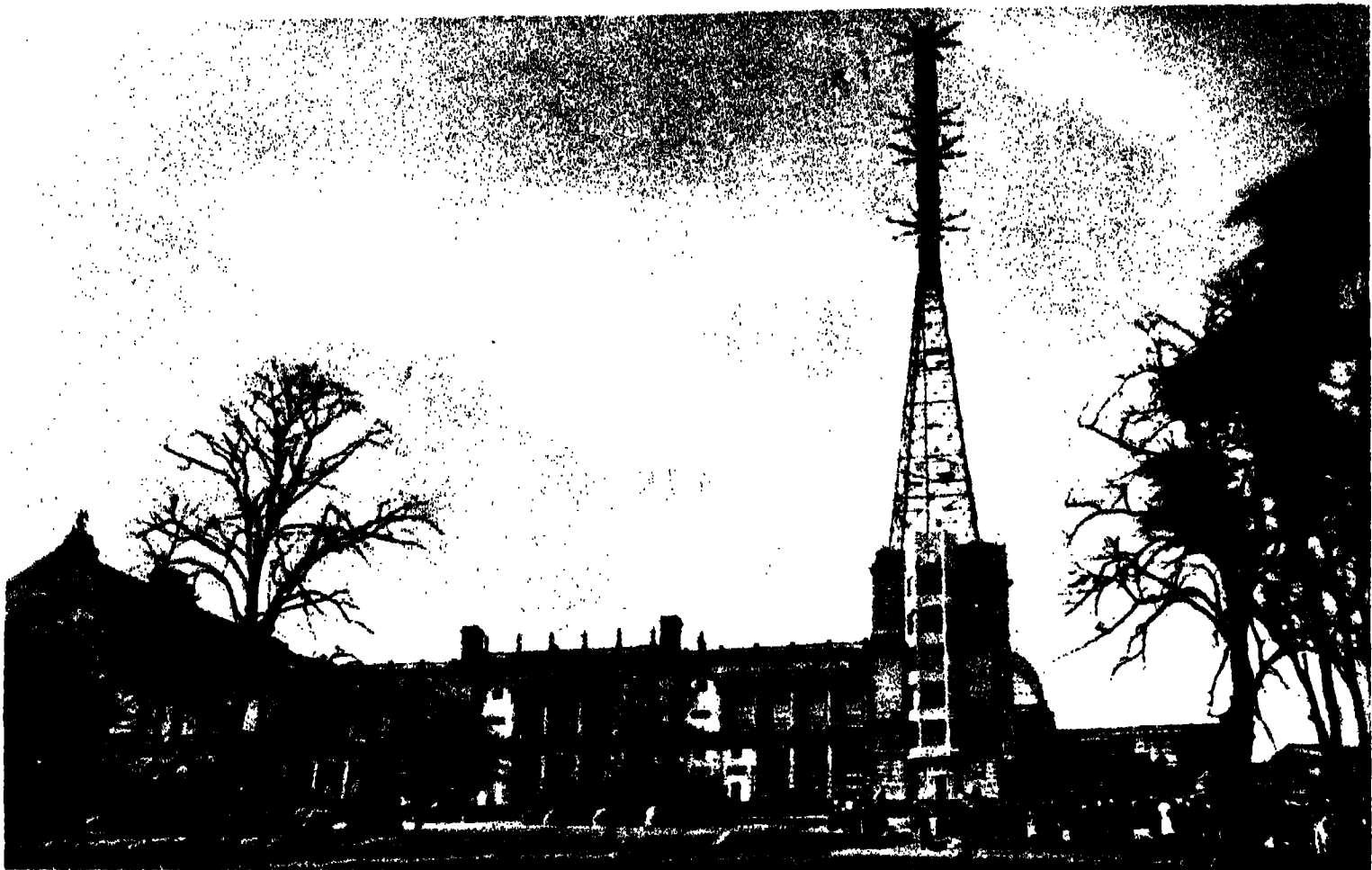


B.B.C. Photo.

"THIS IS THE FIRST GENERAL NEWS . . ."

Broadcasting is now one of the world's most popular forms of entertainment. Of all the varied programmes offered to us the twice nightly news bulletins are perhaps the most universally appreciated. World tidings conveyed to us by word of mouth, even when they are freed from emotional bias, have the strongest possible sense of drama and reality.

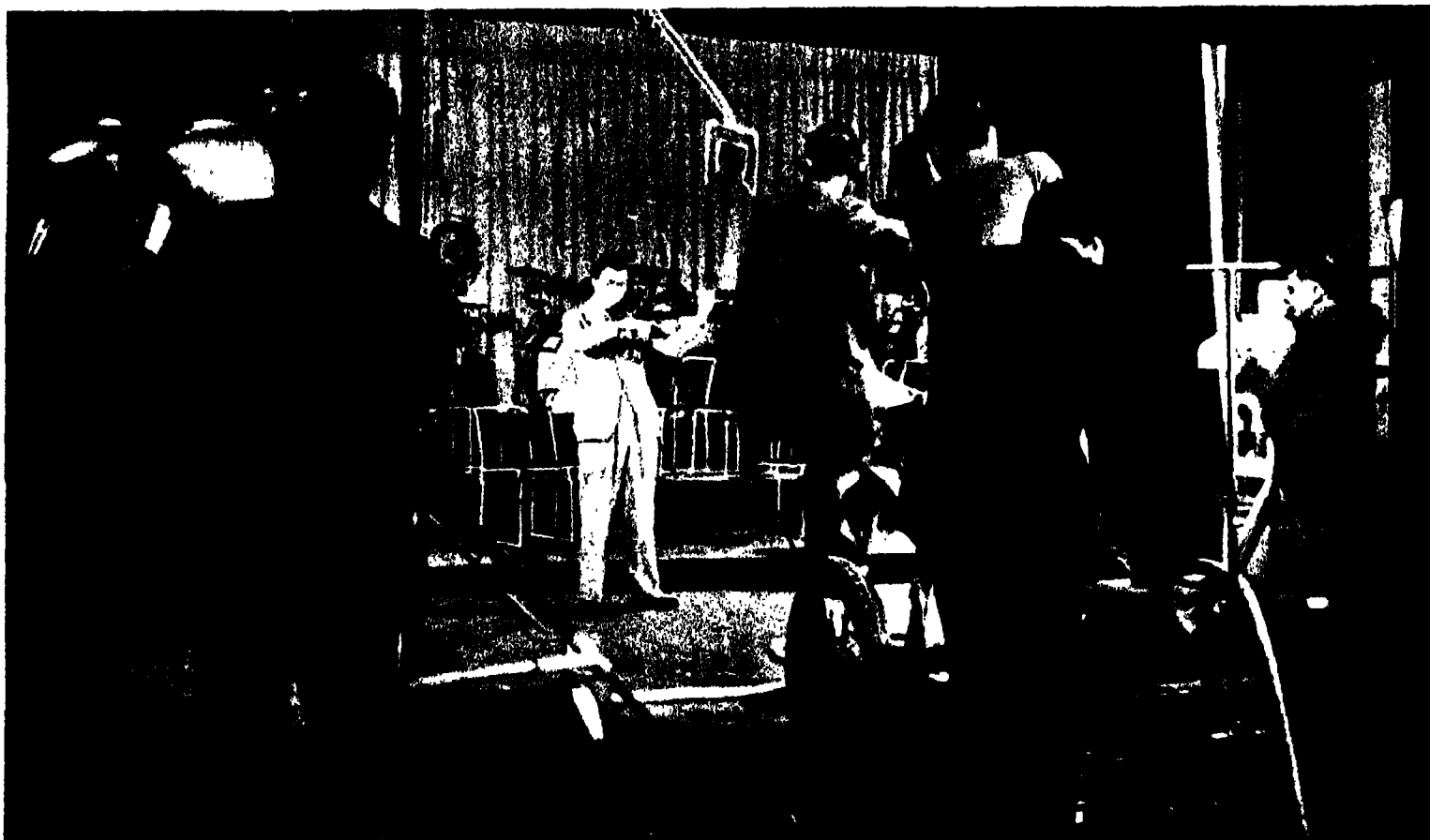
BROADCASTING



THE TELEVISION STATION AT ALEXANDRA PALACE

B.B.C. Photo.

The most modern development of Broadcasting is television and within a year or two it will be as commonplace as radio is to-day. This picture shows the television station at Alexandra Palace where regular programmes are now broadcast.



A TELEVISION PERFORMANCE

B.B.C. Photo.

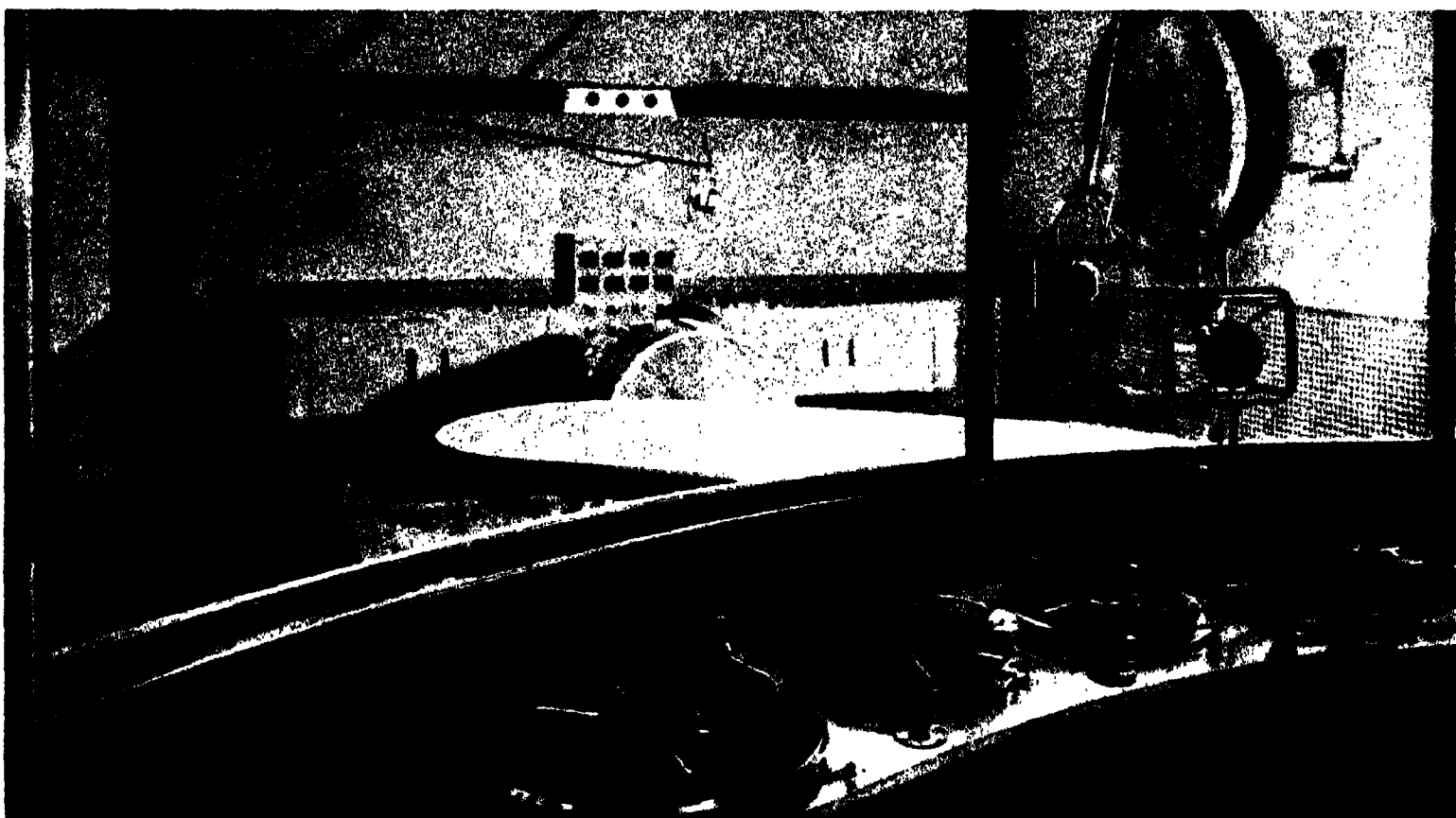
Here is a photograph of a violinist being televised in the Marconi E.M.I. Studios at Alexandra Palace. The Emitron camera for transmitting the vision is in the right foreground. Where formerly artists could appear in ordinary clothes for their broadcast performance, they must now often dress the part and always wear heavy make-up in a television performance.



B.B.C. Photo.

A THEATRE INSIDE BROADCASTING HOUSE

Comparatively few broadcasters have succeeded in making complete friends with the "mike," or rather, they cannot accustom themselves to an invisible audience. To obviate this, audiences are now invited to the studio theatre in order to create a more sympathetic atmosphere for performers. Here we see an operetta being performed with singers at the microphone, the B.B.C. orchestra in the foreground and the wireless chorus seated on the left. Every detail is carefully rehearsed.



B.B.C. Photo.

WHERE STRANGE NOISES ARE MADE

In this picture we are looking from the gramophone studio into the effects studio. Here all sorts of noises for all sorts of purposes are manufactured. A thunderstorm, rain beating on a window pane, the roar of a lion, and countless other requirements which bring realism to broadcasting can be produced. Gramophone records are also used, especially to recall some incident of the past. There is now a gramophone museum of the voices of many famous people.

BROADCASTING



B.B.C. Photo.

NO PLACE FOR A PROMPTER

In the theatre proper, the prompter is always at hand to assist an artist who may have a lapse of memory. The medium of broadcasting does not lend itself to prompting, so the artists are provided with script, which has previously been censored to ensure that nothing objectionable will be broadcast. The central figure is signalling to the effects department.



B.B.C. Photo.

HUMOUR ON THE AIR

Some of the most famous comedians in the world have failed dismally before the microphone. The whole technique is different. On the stage, a comedian may gain a laugh by a mere raising of an eyebrow, but before the microphone he must rely solely upon his voice. In order to assist performers, therefore, audiences are sometimes provided for them.

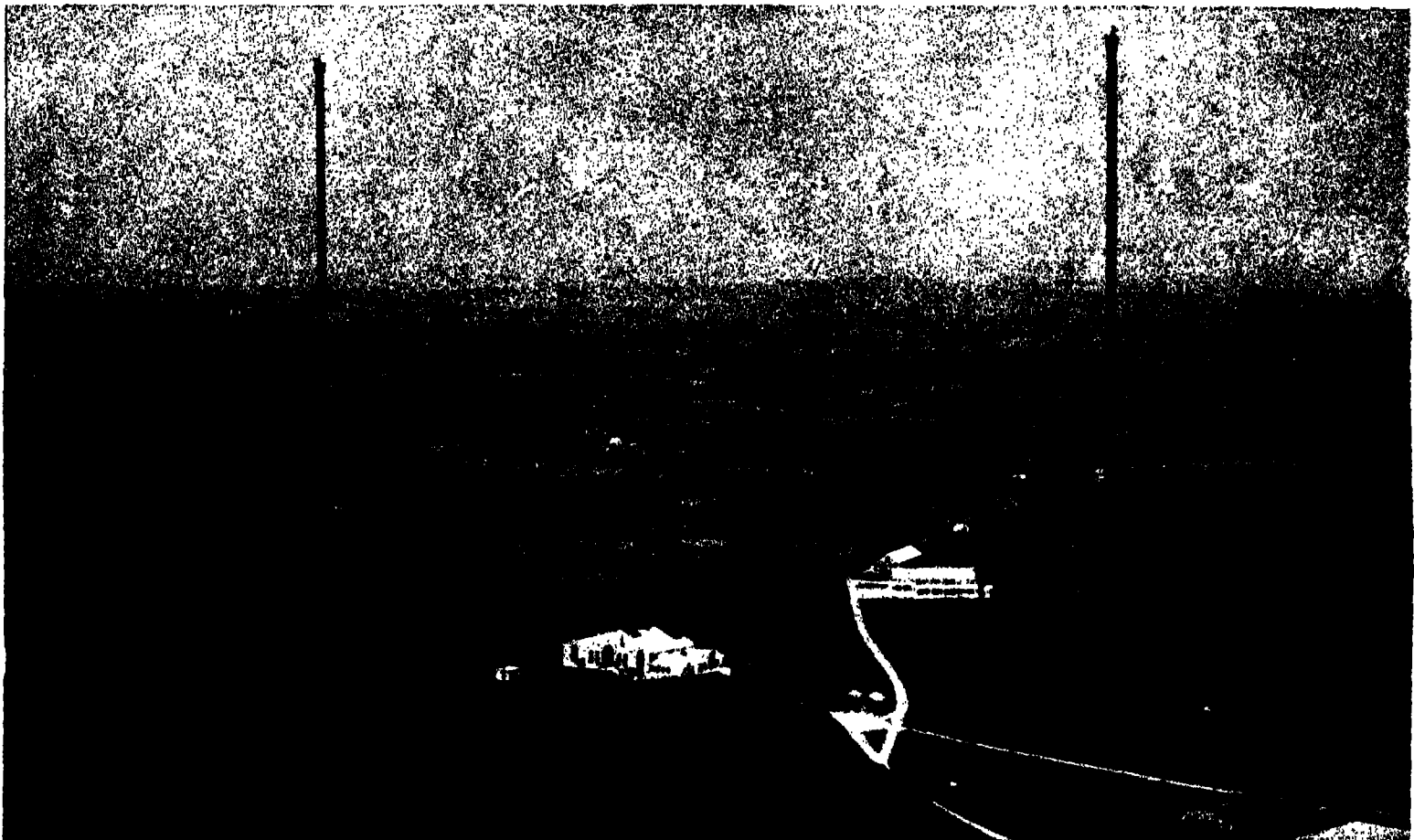
BROADCASTING



B.B.C. Photo.

FROM COVENT GARDEN TO REMOTEST VILLAGE

Until television becomes widely disseminated, the gorgeous spectacle of an opera at Covent Garden, such as *Aida*, shown in this picture, cannot be transmitted by present-day wireless. But the B.B.C. regularly broadcasts acts from grand opera during the season, and has done much to familiarise the general public with some of the world's most famous music.

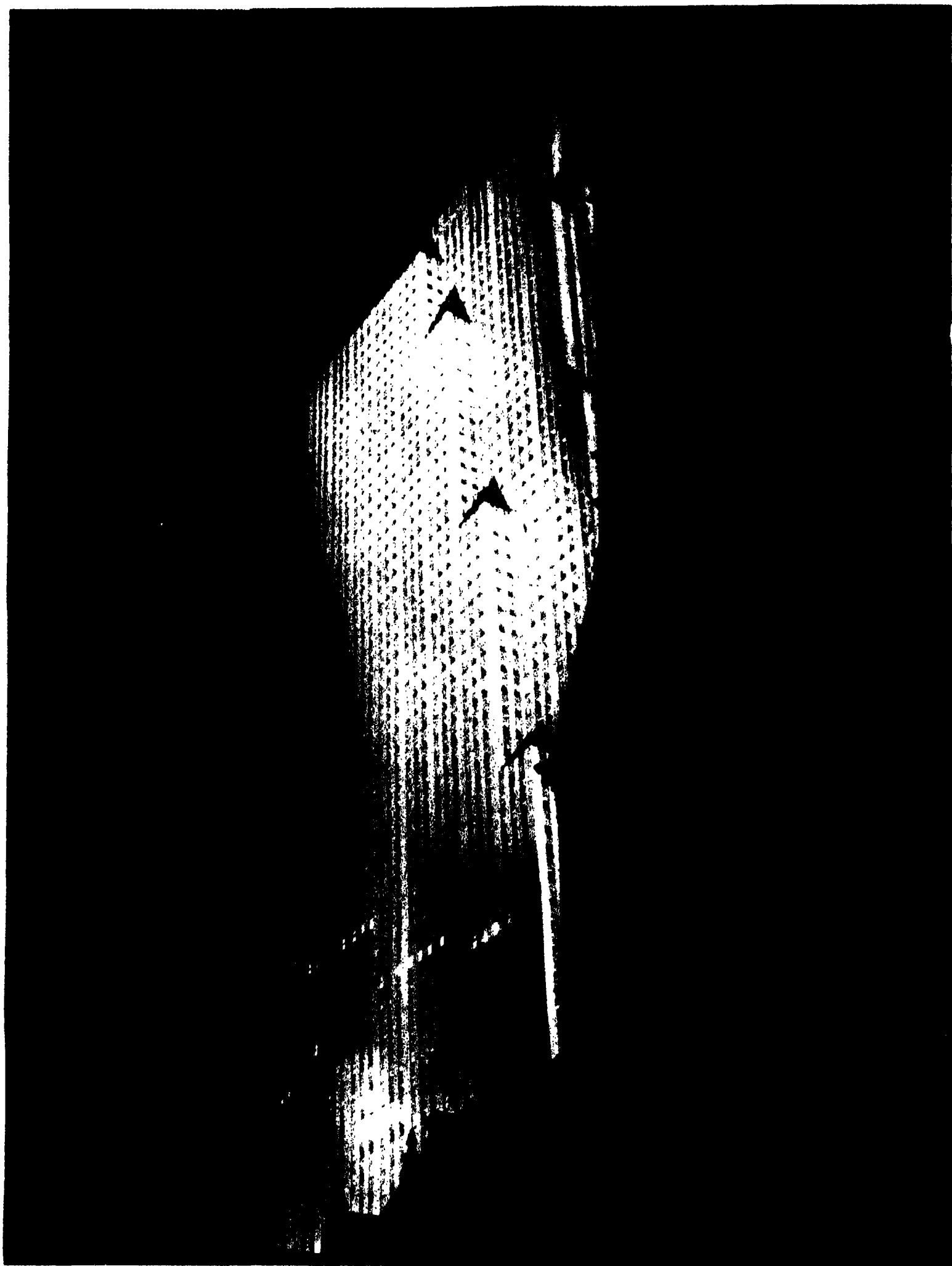


B.B.C. Photo.

RELAYING ROUND THE WORLD FROM DAVENTRY

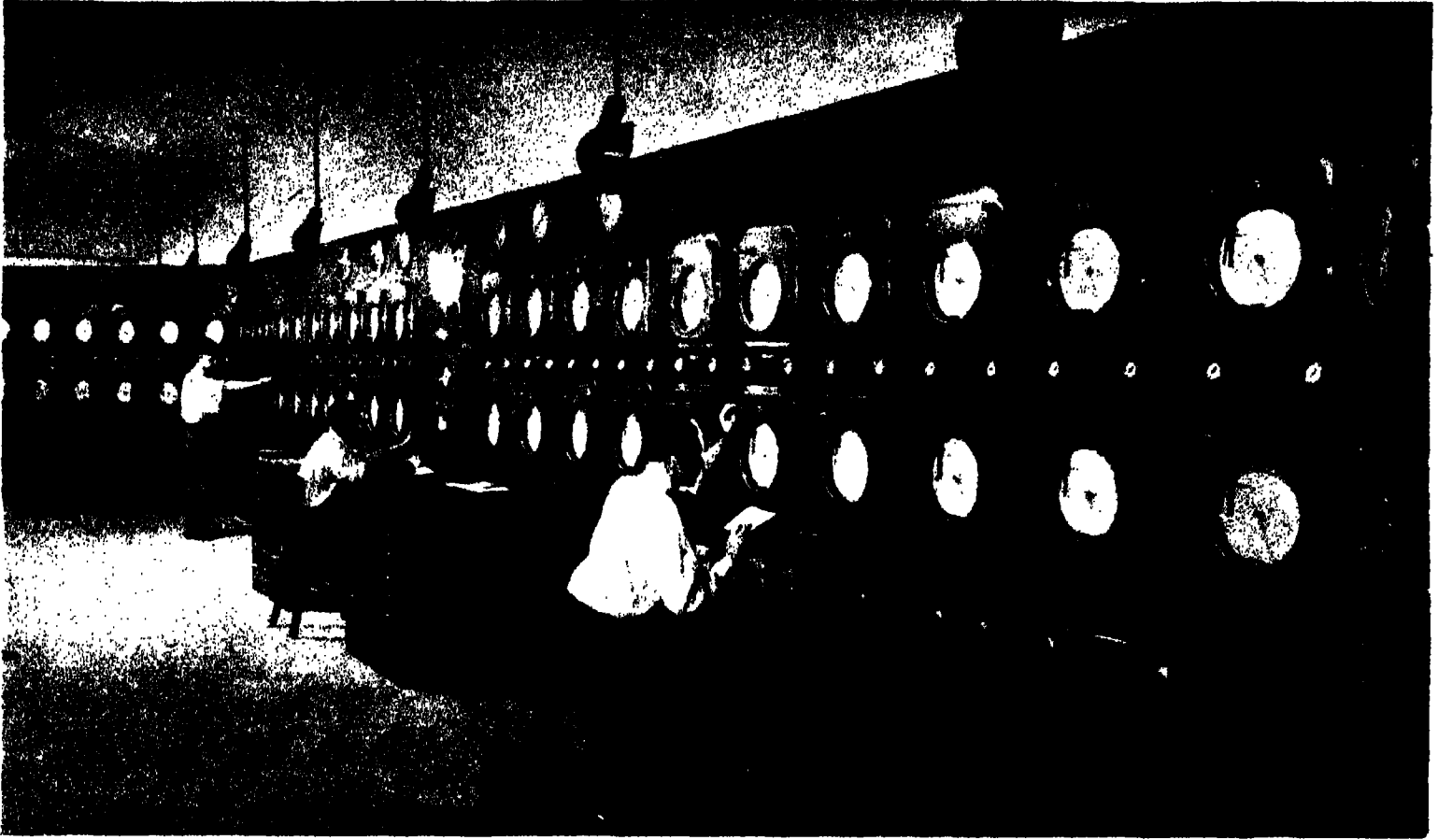
To knit together a far-flung Empire is a dream which has been realised through the inauguration of the Empire Broadcasting Station. Special programmes are now relayed from England and may be picked up in the remotest parts of the British Empire.

BROADCASTING



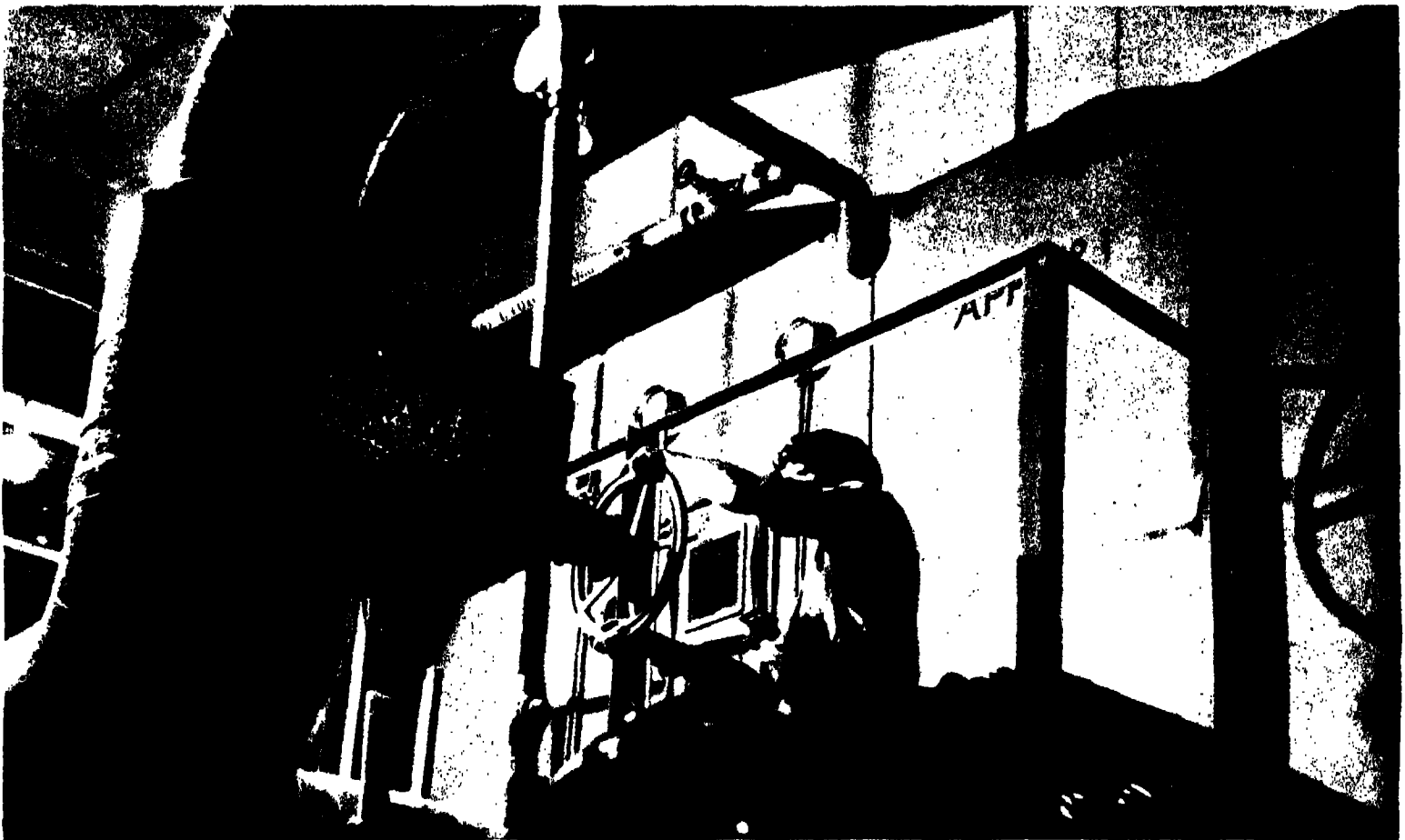
RADIO CITY

Towering into the sky, this beautiful building, Radio City, is the home of American broadcasting. Unlike the British Broadcasting Corporation, radio in America is run by private enterprise, programmes being sponsored by advertisers.



AIR AND TEMPERATURE TO ORDER

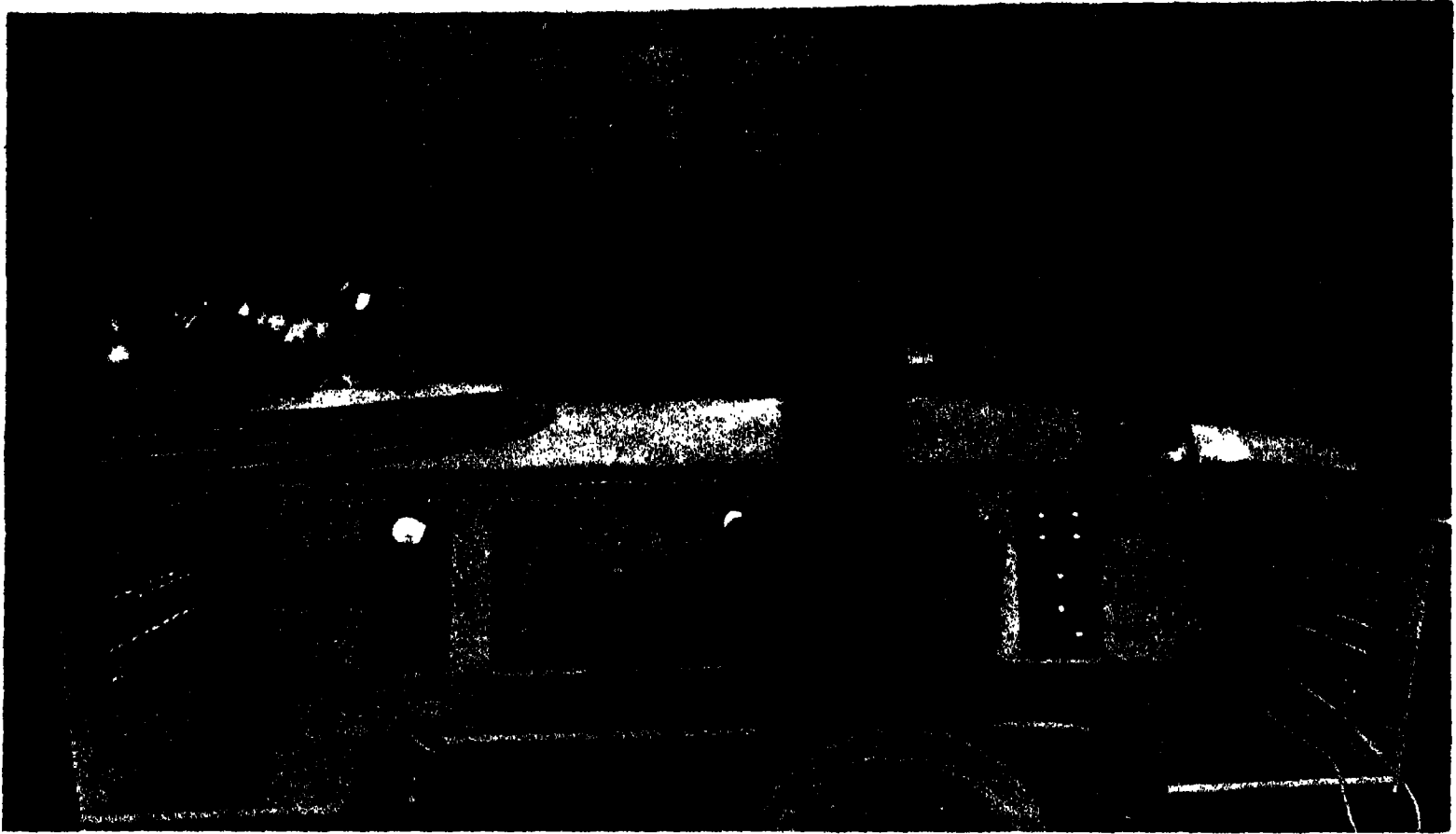
The largest air conditioning system in the world has been installed in the National Broadcasting Corporation section of Radio City. Shown above is the control panel, for regulation of temperatures in all parts of the studio building. The large dials keep a constant graphic record of air conditions in each section, thus ensuring the minimum discomfort to artists.



WASHING AIR FOR ARTISTS

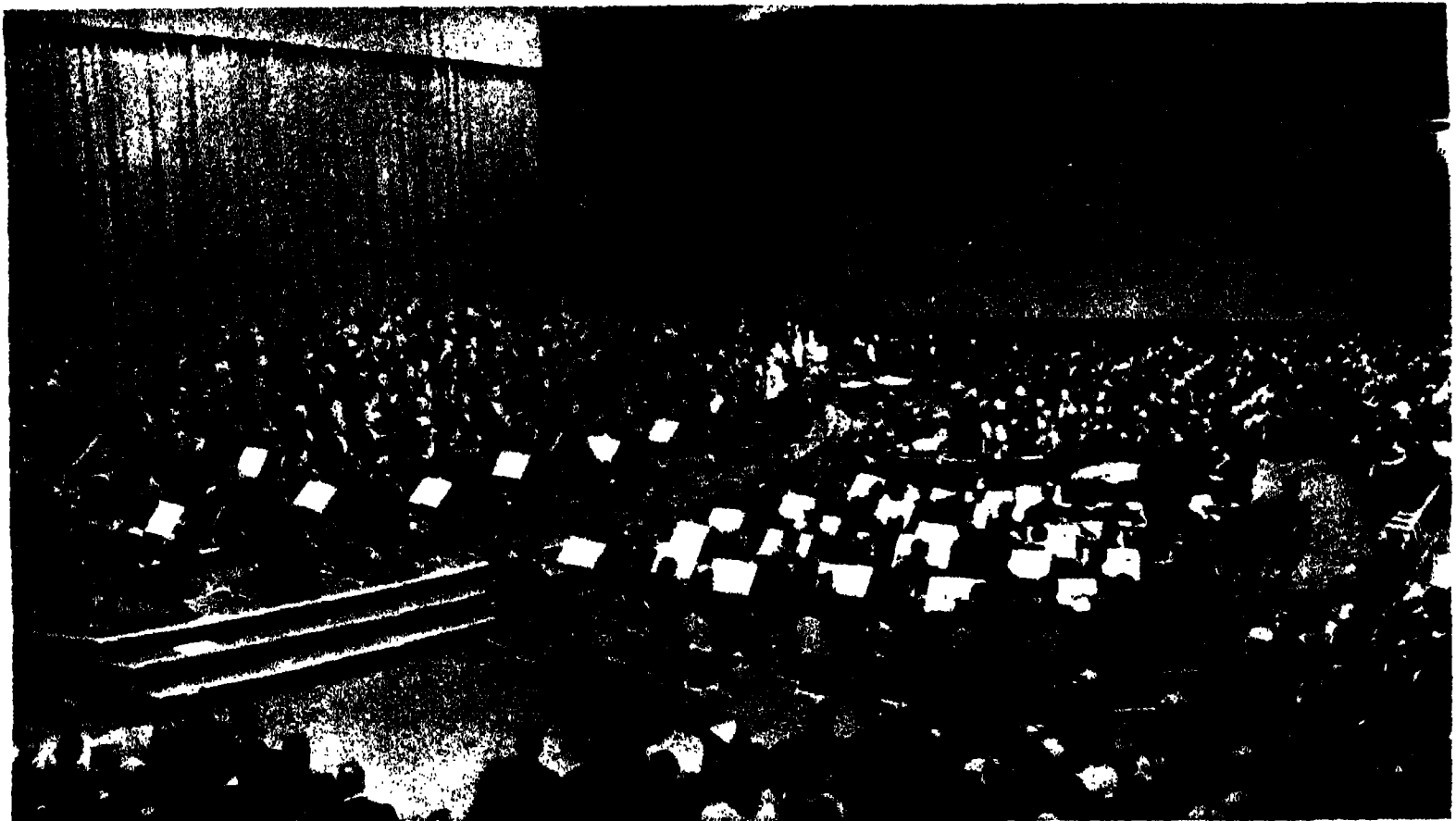
Here is the circulating pump and tank for washing the air which is supplied to the N.B.C. studios. In the tank, the air is heated or cooled according to the state of the weather. As the studios are entirely enclosed, constant circulation and changing are necessary to prevent the atmosphere from becoming completely unbearable in such an enormous skyscraper.

BROADCASTING



AN AUDITORIUM STUDIO IN ACTION

Every broadcast performance is preceded by the most careful rehearsal. Looking from the control room we can see a rehearsal in progress in the N.B.C.'s huge auditorium studio in Radio City. The controller receives the broadcast under the same conditions as the listening public, and is therefore able to give directions to artists for the correction of faults.



THE LARGEST STUDIO ORCHESTRA IN THE WORLD

At the inception of broadcasting, many people felt that it would seriously affect the musical profession and trades. The opposite has been the case. The creation of orchestras of a high standard, which normally it would be almost impossible to maintain, has led to increased interest on the part of the general public in classical and light music. The above orchestra of four hundred musicians is the world's largest, and is seen broadcasting in a studio at Radio City.

LAW AND ORDER

"**L**AW is the King of Kings, far more powerful and rigid than they : nothing can be mightier than law, by whose aid, as by that of the highest monarch, even the weak may prevail over the strong."—THE VEDAS.

Every community, whether primitive or civilised, has a set of rules which regulate the conduct of its members in their relationship with each other, and with the members of other communities. The sum total of those rules is the law of the community, and since every civilised country provides a machinery for enforcing its law we may define law as the sum total of the rules which are observed and enforced by the Courts of a country in determining the legal rights and duties of its citizens. No country could exist without a legal system, for unless there is some sovereign power to proclaim the duties of subjects towards each other, and to enforce the fulfilment of those duties, every man could act as he pleased, and a state of anarchy would ensue. The law, while apparently restricting the liberty of a man, is, in fact, operating to protect that liberty, for it is only because of the existence of the law that we are free to walk unblemished in the streets, and to enjoy undisturbed the benefits of the property we have earned by our own endeavours.

The nature of the sovereign power which creates the laws of a country depends in every case on the system of government which obtains in that country. In an autocratic system the laws will be made by a king or a dictator, who may or may not be influenced by the feeling current among his people, and who will, in any event, be the sole arbiter of his country's needs. In a democratic system, however, the law is created at the will of the people, and expressed through a representative legislative machine (e.g., a parliament) designed for that purpose.

The Machinery of English Law

The machine which exists in England for the declaration of the law is called a parliament (the word originally meaning a parley), and is composed of three distinct parts—the Crown, the House of Lords and the House of Commons. The procedure for enacting the law is a complicated one. The proposed law, called a Bill, is presented to one or other of the Houses of Parliament and undergoes a first reading, which is of a purely formal character. Then follows a second reading, when the general principles of the Bill are debated, and if the principles are acceptable to the party in power the Bill will be "committed"; that is to say, it is referred to a Committee of the House for detailed discussion

of its provisions. In committee the Bill is considered clause by clause, and probably receives considerable alteration, and after passing through the committee stage the Bill is once again put before the whole House, and given a third reading and, if carried, goes before the House of Lords. In the House of Lords the Bill (unless it is a money Bill, when exceptional rules apply) passes through the same procedure as in the Commons and, assuming that it has the approval of the Lords, is presented to His Majesty for the Royal Assent. It is only after this assent has been received that the Bill becomes an Act of Parliament, and makes its appearance in the Statute Book.

In the event of a dispute between the Lords and the Commons, the Parliament Act of 1911 provides, in effect, that if a Bill passes through all stages during each of three sessions of the House of Commons, and is, after each occasion that it is passed by the Commons, rejected by the House of Lords, or amended in a fashion unacceptable to the Commons, upon the third occasion of being so rejected the Bill can be presented to the King for his consent, and when given becomes an Act of Parliament. The only exception to this rule is a Bill to prolong the life of a Parliament beyond its present maximum duration of five years, which can never be enacted without passing through the House of Lords.

As the Royal Assent to a Bill is a matter of form, and the House of Lords, as has been shown, has power only to delay, and not to veto legislation, it will be seen that the overriding power of legislation is with the House of Commons, which is composed of the duly elected representatives of the people of the country.

In theory the only instrument which can make law is Parliament, but in practice this is very far from being the case; and if it were so a great many cases would arise to which no solution could be found, as there would be no statutory provision applicable, for the statute law of the country is still far short of covering the whole range of national activities. In fact, a mass of law has been and is being constantly made by the judges of the High Court, and whenever a problem arises in respect of which there is no settled law, the judge before whom the case comes will make his own law for the occasion.

It must not be imagined, however, that a judge will decide a case involving a new point in any arbitrary manner he thinks fit. If there is a legal principle applicable, which has already been approved by the courts in previous cases, the judge is bound to decide the case in accordance

LAW AND ORDER

with that principle, and it is on account of the force that previous decisions must have in influencing the judge that the system of judge-made law that we have in England is called a system of judicial precedent: for it is according to the precedent of previous cases that a judge is obliged to make his decision. This practice of investing a decision with a binding force for all future cases on the same point belongs exclusively to England and to the United States of America (where the legal system derives from the English system), for on the Continent one decision cannot bind the court to decide similarly if a case on the identical problem arises again, and it is impossible to say why the English system has diverged in such an important particular from the other systems of the world.

Apart from the statute law and judicial precedent there are other sources of law which may be briefly mentioned.

Frequently the law is determined from the custom which is prevalent in certain districts, or amongst certain professional classes, or to put it another way, a custom will become a law, and various rules exist which a custom must satisfy before it is acceptable to the courts.

A great deal of the law made is what is called delegated legislation; that is to say, laws made by persons or bodies to whom Parliament has deputed the task. Frequently an Act of Parliament will empower a minister of the Crown to make any provisions by order in council, which may be necessary to achieve the purpose for which the act has been designed, and which may have been inadvertently omitted from the text of the Act. So, too, powers may be vested in a local authority to make bye-laws for the benefit of the area it controls. Very strict rules exist as to the surveillance over orders or laws made in this fashion, to ensure that the delegated powers are not exceeded.

So far we have been concerned with the manner in which the law is made. A short mention is necessary of the subject matter of the law. The law of a country is divided, and the divisions denominated in various fashions, but the principal division is into criminal (or public) and civil (or private) law. The criminal law is normally invoked only by the state where there has been a violation of a public right (e.g., murder), but the civil law is intended to protect the private and personal rights of the citizens, and gives them liberty to seek redress in the courts for any infringement of those rights, such as a breach of contract or a trespass to their land.

In our time we have seen the extension of the idea of the controlling power of law in the establishment of the League of Nations whose aim it is to promote the solution of international troubles by means of arbitration, persuasion, and inter-

national law. Just as the law courts of all countries have taken the place of the duel and similar methods of settling private difficulties so, wise men hope, will the League of Nations or something like it take the place of war in settling difficulties or disputes of an international character.

How Superstition Affects the Laws of Primitive Peoples

Among primitive tribes, law is just as necessary as in more civilised states. In fact, a state of complete anarchy is unknown in the history of mankind. The real differences are in degree and not kind, for the rule and justice of an all-powerful tribal chief achieves the same results as the full dignity of an English trial—that is, the culprit is punished. But in an English court of law, the trial is conducted according to the known law, and the interests of the accused are guarded as fully as possible. Nothing, such as rumour or local prejudice, is allowed to influence the course of justice. But with native tribes, religion and superstition, often indistinguishable, play a considerable part. The failure of the crops, for instance, may be considered due to the "evil eye" and some poor wretch will be saddled with the responsibility following upon all sorts of religious rites. The predominating influence is a terrible fear of unknown forces which are assumed to cause catastrophes which the western world has long since recognised as natural occurrences due to the working of the laws of nature. The white man's influence is gradually lessening the cruelty of native justice, but in doing so it is necessary to bear in mind that many tribal customs are effective, even although they appear crude.

The subject of fear raises a final point. It is now generally realised that there are two sorts of crimes—premeditated and those committed on the spur of the moment. With regard to premeditated crime, there is little doubt that the fear of serious punishment has a deterrent effect, in that it prevents the would-be nervous evil-doer from carrying out his intentions. The confirmed criminal will take his chance of not being found out. But unpremeditated crimes are in a different category, and provide the main argument for those who are against capital punishment. Comparatively few murders are premeditated, and, therefore, so the opponents of capital punishment argue, the rigours of the law do not act as a deterrent. Further, the punishment is irrevocable, and there is always the chance that a miscarriage of justice may occur. But, whereas justice has been radically humanised, in the philosophy of Gilbert and Sullivan, the punishment must fit the crime, if the security of honest citizens is to be maintained, and law respected.



E.N.A.

"AN EYE FOR AN EYE . . ."

Stages of civilisation are clearly reflected in the laws by which people are governed, but experience shows that laws which serve one country are not always suitable for another. These Abyssinians, for instance, settle minor disputes by asking the first intelligent man they see by the way or in the market place to act as a judge. His decision, based on "an eye for an eye and a tooth for a tooth" is accepted as final. It is rough and ready justice, but sometimes serves its purpose.



E.N.A.

A PALAVER IN THE BELGIAN CONGO

This animated scene shows a typical palaver at Ruanda, in the Belgian Congo. The chief of the tribe is listening to a discussion between members on a problem which has to be settled. Such meetings take the place of the more formal parliaments or assemblies of the western world, and are certainly just as effective, since tribal decisions are loyally obeyed.

LAW AND ORDER



G.P.A.

WARRIORS AT A COUNCIL OF WAR

All good law depends ultimately upon the sanction of the governed. This is a principle which is practised even if not fully appreciated by native tribes. The gesticulating figure in the centre of this picture is probably telling the tribe that their honour is at stake and that war is the only method to right this wrong. In other words, he is seeking tribal co-operation.



Wide World

A KING SITS IN JUDGMENT

But a good deal of superstition is often mixed up with law. Here is the King of Oyo, in Nigeria, in council in his Court Palace. In the centre is the King's Diviner, who takes up his position at the entrance to the court during a session to ward off any evil influence that may be brought about by the presence of strangers and also to protect the King's person.

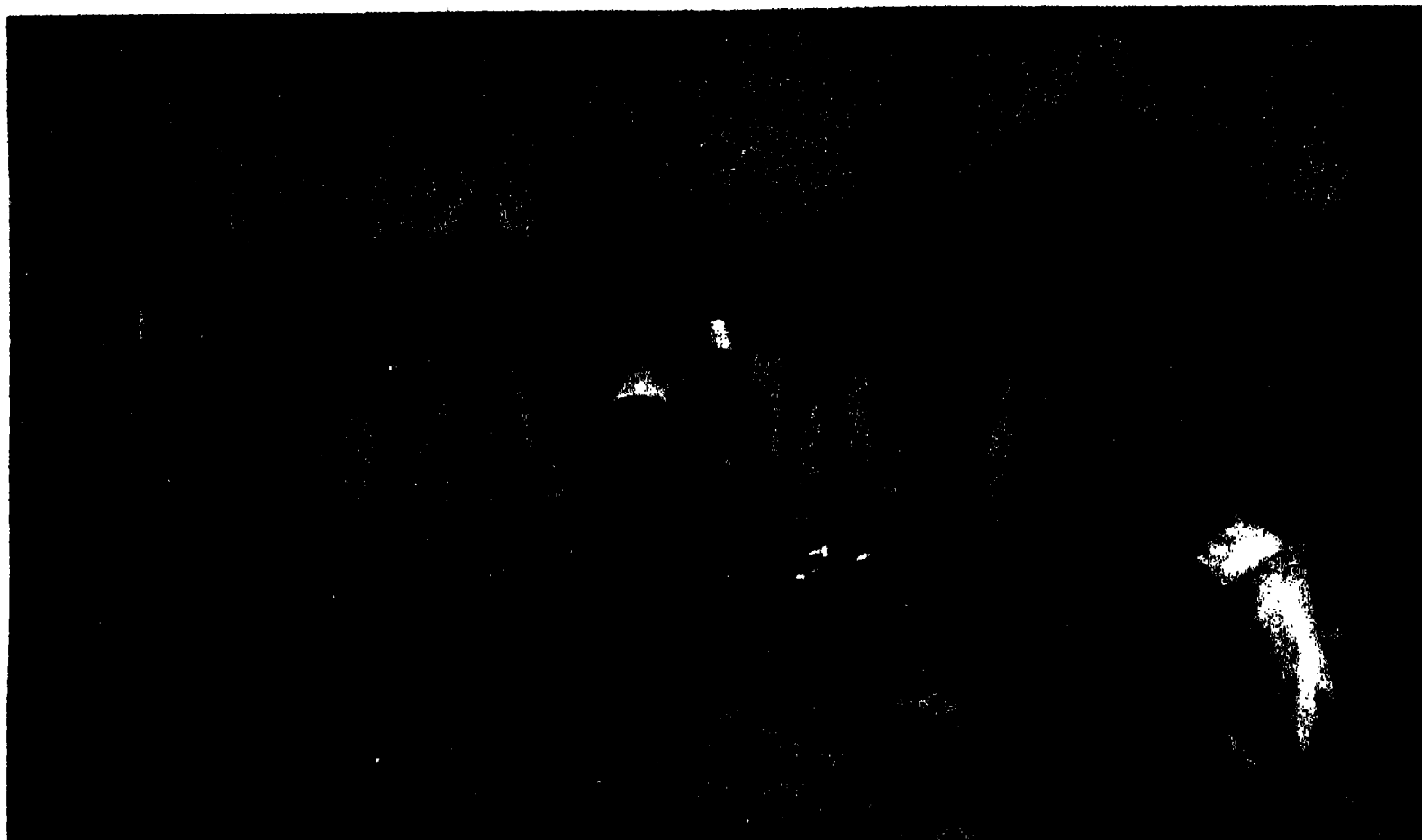


Wide World

THE WHITE MAN'S JUSTICE

Where the white man intrudes upon the territory of native races, the security of his occupation depends very largely upon the absolute justice of the measures which he pursues. The native understands and responds to equitable justice, although he probably prefers the full liberty of his natural state. This picture, taken a few miles outside Cape Town, shows natives being medically examined after receiving cruel treatment from a European headman who had been arrested.

LAW AND ORDER



G.P.A.

GAMBLING FOR PRISONERS

Justice, too, to be really effective, must include with impartiality all members of a state, irrespective of colour, politics, or creed. Here we see a gambling contest to decide the future ownership of the negro prisoners who are bound together in the background. This, of course, represents a low standard of culture, since the prisoners will become mere slaves.



E.N.A.

A CHINESE COURT OF LAW

Oaths of varying descriptions are found in almost every court of law. A symbol, whether it be the Chinese breaking of a plate or blowing out a lighted candle, or the Christian kissing of a Bible, is used to emphasise the solemnity of evidence and the penalties which follow the giving of false witness. These kneeling Chinese witnesses are swearing to speak the truth.



E.N.A.

WHERE THERE IS NO ESCAPE

To be successful, justice must not only be impartial, but, equally important, it must visit wrong-doers swiftly and surely. There can be no room in a civilised state for privileged individuals or groups of individuals. Here, for instance, we see fourteen members of the "Blood Brotherhood" on trial at Tokyo. Failure to bring them to justice would undermine the state.



Wide World

JUSTICE WITHOUT DISCRIMINATION

Corruption is a canker which eats at the very vitals of a nation ; and unless checked spreads like a plague. This is particularly the case where legal appointments are dispensed as political favours. This picture shows the Louisiana Lower House hearing evidence in connection with the impeachment of a state official who has been accused of corrupt practices.

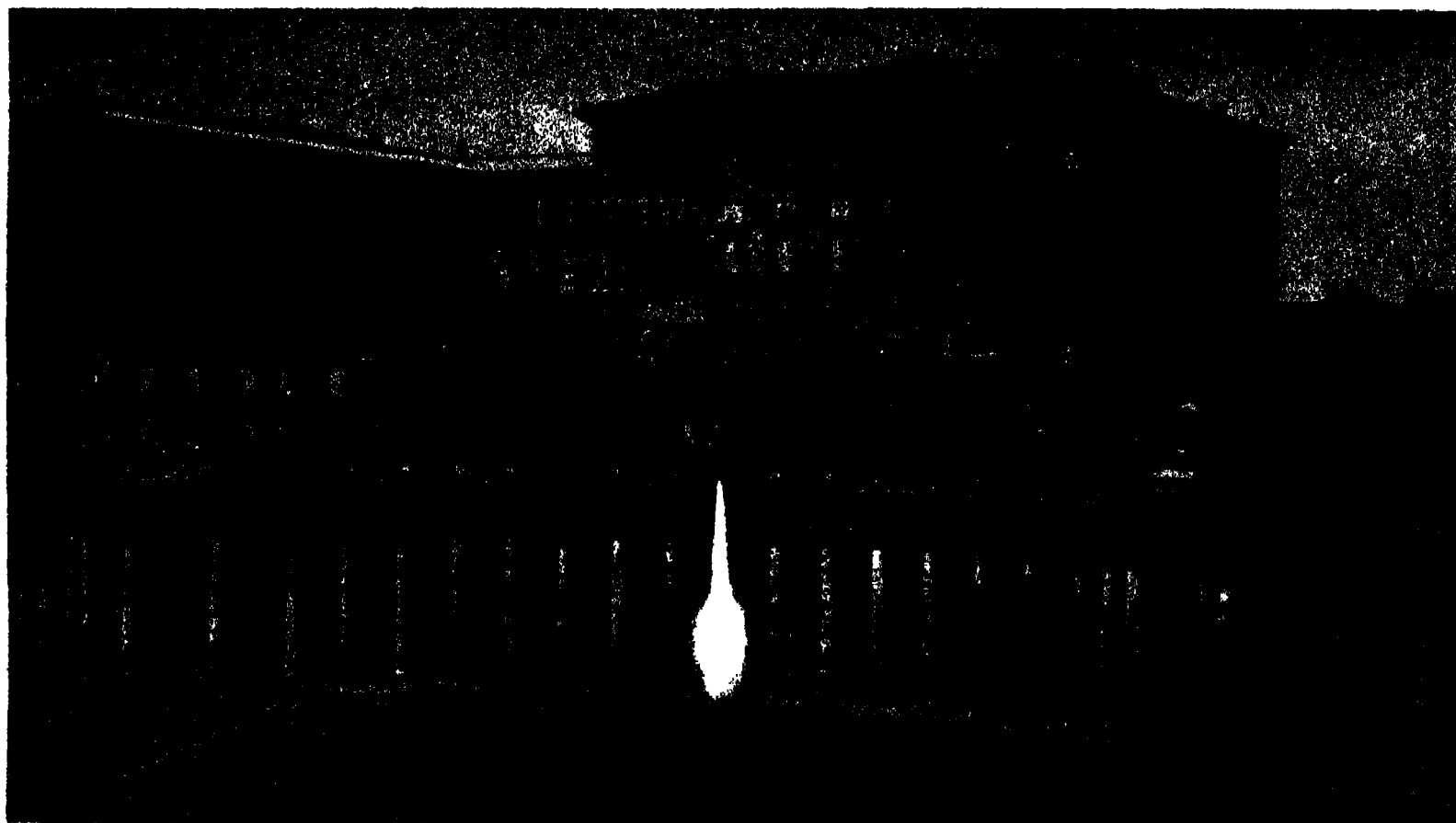
LAW AND ORDER



Wide World

A POLITICAL TRIAL

Violence in politics almost inevitably leads to violence in justice. "His Majesty's Opposition" is a term peculiar to Great Britain, and has saved us from many political upheavals. In many countries, however, an opposition is an enemy of the state, which the party in power feels compelled to suppress in self-defence. The above is a German political trial in progress.



E.N.A.

THE ECCLESIASTICAL COURT OF THE VATICAN

The Vatican, the centre of the Roman Catholic Church, represents a type of law which is outside the normal affairs of state, although, at times, politics and religion have unfortunately clashed. Ecclesiastical courts, as they are called, are a parallel to such bodies as the Medical Council, which formulate rules which are legally binding upon their members. Priests or doctors may be deprived of their titles at such courts, and unless the ordinary law is affected, have no appeal.



Sport and General

THE CENTRE OF BRITISH JUSTICE

The Law Courts in the Strand have been the scene of many famous trials, and it is a tribute to the respect paid to the law that few litigants depart with a legitimate sense of injustice. The prisoner is always given the benefit of the doubt, and unlike French justice, starts with the plea of "Not Guilty." Thus, the onus for proof of guilt is with the prosecution.



Wide World

THE DIGNITY OF THE LAW

The proceedings in an English court of law are essentially dignified, and although crowds do struggle to be present at a "fashionable" trial, demonstrations within the court are immediately suppressed. Such dignity is clearly portrayed in this picture of one of the judges in procession at the opening of the Surrey Assizes, after having attended Divine Service.

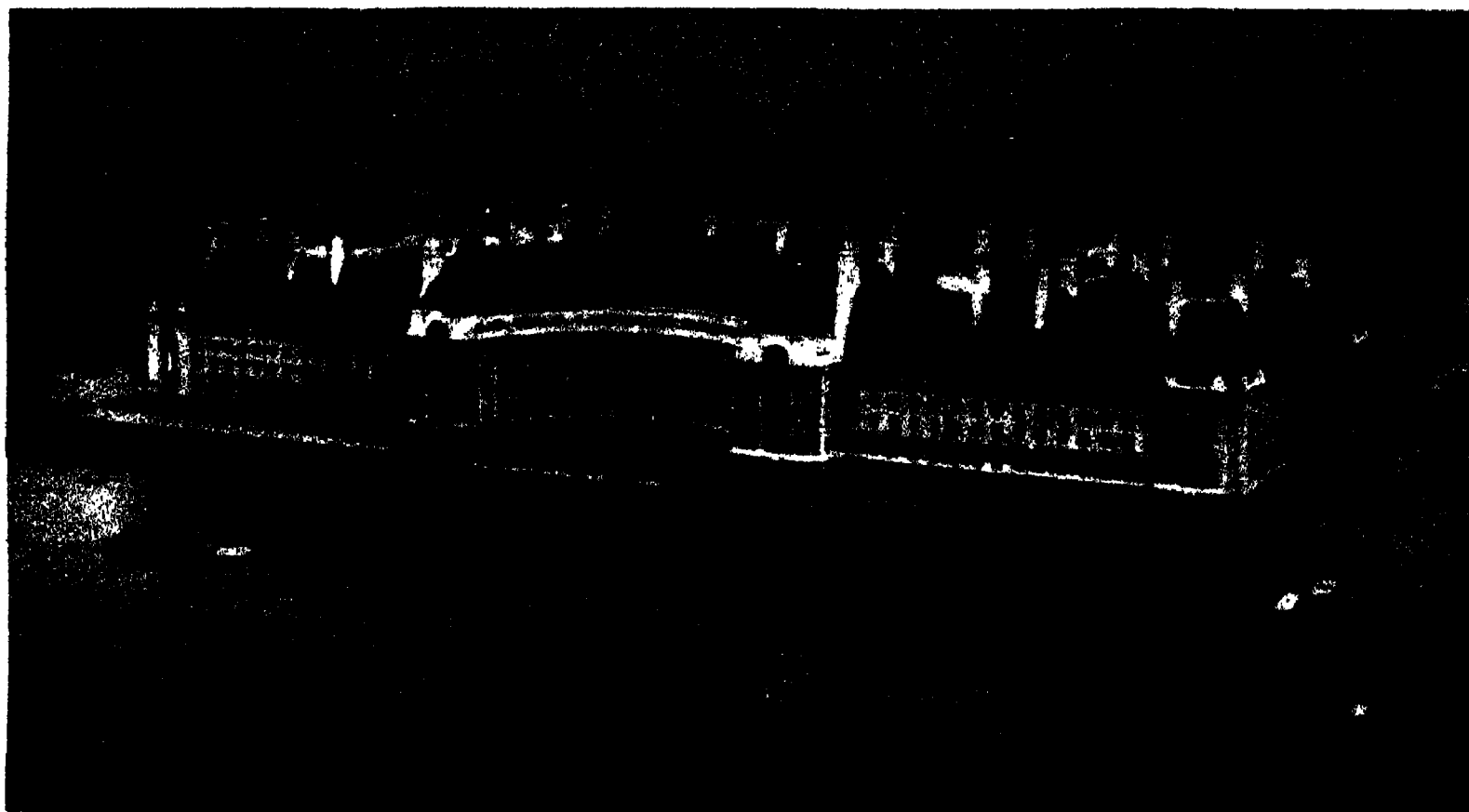
LAW AND ORDER



Sport and General

THE MOTHER OF PARLIAMENTS

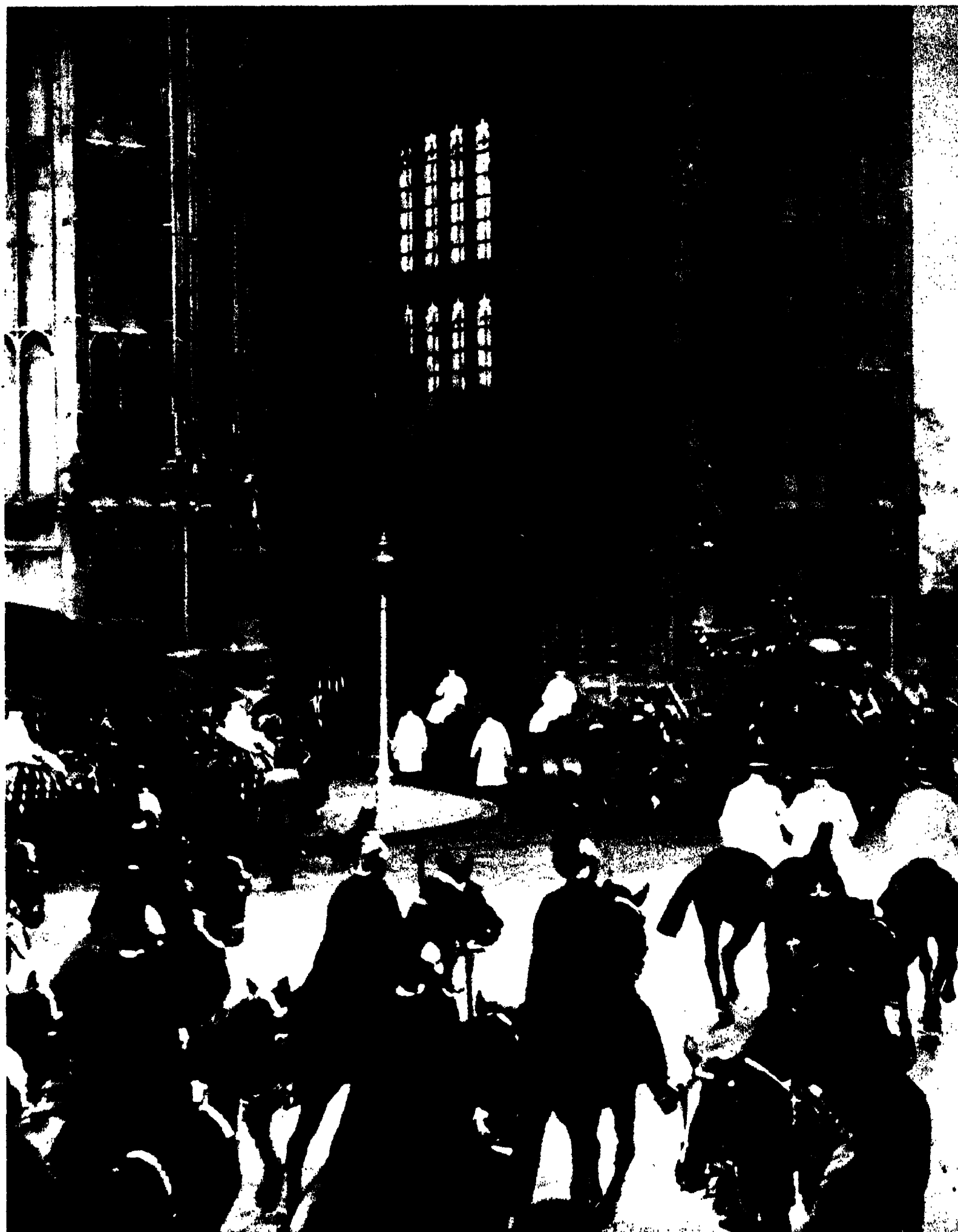
Parliament is the supreme law-making authority in the kingdom. It can alter the most fundamental laws in the same fashion as it passes a Railway Act. Each parliament can revoke any act passed by any previous parliament. When the House is sitting, a flag is flown from the tower on the left by day, and at night a light is shown from the top of Big Ben.



Sport and General

WHERE LONDON IS GOVERNED

The County Hall has been fittingly built opposite the House of Commons, and represents the age-long cherished traditions of local government. County councils, borough and urban district councils are all concerned with local affairs, including the levying and collection of rates necessary for the provision of local services, without which life in towns would be impossible.

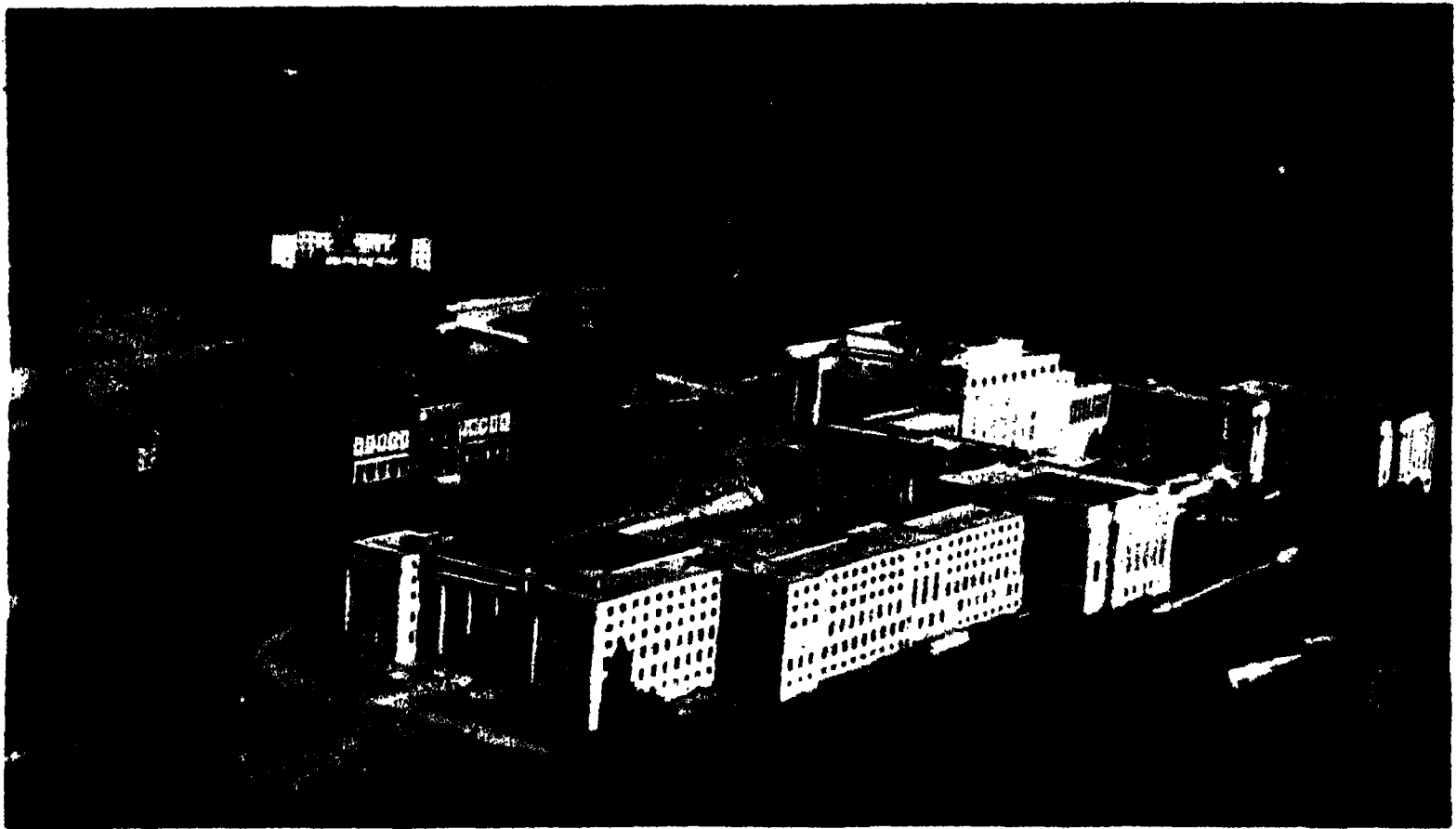


Wide World

THE STATE OPENING OF PARLIAMENT

At the commencement of each session of Parliament, the King drives in state to deliver his address which outlines the policy of the Government. After this the House elects its Speaker, who presides over the proceedings and guards the ancient privileges and established procedure for debates. His complete impartiality is essential—and assured.

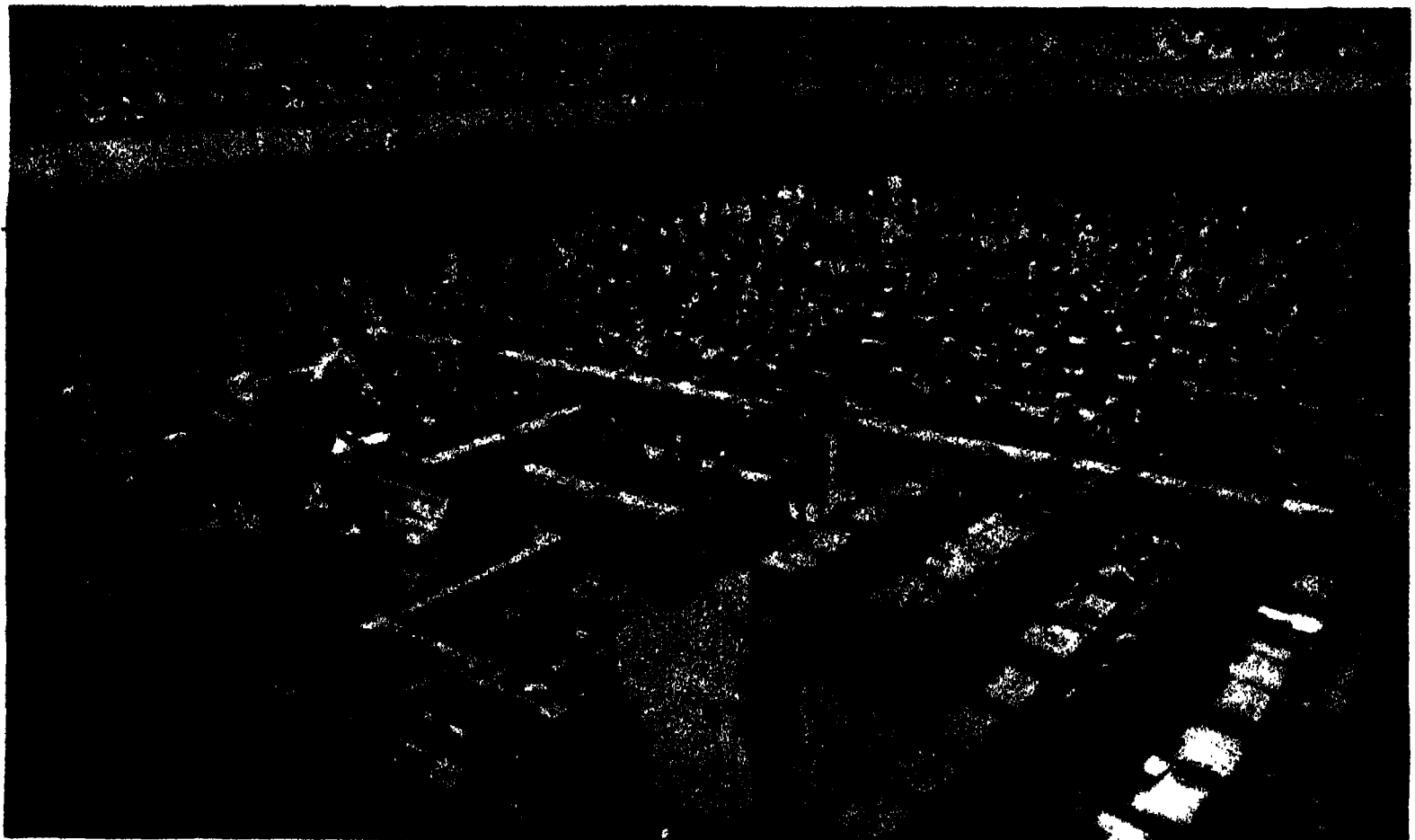
LAW AND ORDER



Swiss Federal Railways

A PALACE DEDICATED TO PEACE

The vast new headquarters of the League of Nations stand overlooking Lake Geneva. After the Great War, the League was founded as an organisation for the preservation of peace and the settlement of international differences. The great powers have a permanent seat on the Council while the others are elected in rotation, but all have a seat on the Assembly.



E.N.A.

DISCUSSING THE AFFAIRS OF THE WORLD

Although the League has disappointed its adherents in its failure to solve major international disputes, it has been of great service to the world in less spectacular fields. It is noteworthy that Germany and Japan, though retiring from the League itself, have kept their membership of the organisations it has founded. Here is the League Assembly in session.

SCHOOLS OF TO-DAY

IN a changing world the developments of the past century have effected a veritable transfiguration of education.

Changes have naturally been less rapid in some countries than in others. Educational method, moreover, has varied with the genius of each people. To-day national systems have attained a general similarity; nevertheless the pursuits and environment of individual peoples, the lessons which history has taught, and national temperament still demand special attention for this or that feature of the educational process.

America, for example, is the land of kaleidoscope change. May not this characteristic be reflected in the country's experimentation in educational matters? Even in pre-school years her children are prepared for the daily happenings of home, and street, and school. Scientific testing has revolutionised the teaching of certain subjects. School curricula and the ideal periods for each educational stage are matters under patient and constant review by those concerned.

The Methods of Various Countries

Is it fancy which would see, in France's sharpened interest in physical development, a reaction to the lessons of war? The thorough German and enthusiastic Scandinavian countries regard the training of the body almost as an exact science. Organised hiking and gymnastic exercises, as well as the famous German "School Holiday Homes," are all expressions of this search for physical perfection. Truly democratic Denmark offers the same secondary education to all who can win their way to it, but varies fees in accordance with a parent's ability to pay. In Holland a deep religious sense insisted, a few years ago, that efficient denominational schools should receive State support. Every country has shaped its technical education to serve its characteristic requirements.

Such points, however, can give but the briefest indication of national variations. An exhaustive account of the different systems would be of value only to students of the science of education; it would moreover, fill several volumes! From the popular point of view interest must centre in the vastly increased importance attributed to education in civilised lands, and to the changed methods which, within limits, are common to them all. Let us glance at these points.

In earlier days official recognition of educational requirements was contemptuously meagre. Strength of limb was then the principal qualification for most types of employment, why, therefore, worry about education? Such seems to

have been the sordid and unenterprising reasoning of national rulers. As a result education was left to the Churches, and to the enthusiasts who, happily, were never lacking. Their work, done with varying success, was almost invariably hampered by lack of adequate financial means.

How Education has Spread with Industry

Perhaps it is not an inspiring thought that educational development has its roots in business necessity. Such, however, is undoubtedly the fact. More than ever do modern industrial conditions demand physical fitness; but quickness, mental adaptability, and technical skill are to-day of greater value than the strong right arm. A nation which failed to develop these qualities would fall behind in the industrial race, and that danger no government could regard with equanimity. The prospect of possible relegation, coupled with the insistent demands of the community, forced the hand of Governments, and State responsibility for education was, not without opposition, accepted.

That a common force was at work is indicated by the fact that this acceptance was roughly contemporaneous in several countries. American legislation finally recognised the principle of State-supported schools in 1871. In France the Communes were empowered to acquire their own schools in 1878, and in 1881 all school fees were abolished. In Britain 1870 may be regarded as a key year. The Education Act then passed was in the nature of a compromise between the old denominational system and the newly contemplated public control; it went a long way, however, in the latter direction. Avowedly it was intended to "fill up the gaps" where provision for public education was inadequate. Moreover, it invented "School Boards" and empowered them to build their own schools; and it recognised the principle of universal rating for educational purposes, a very necessary change.

How the State has Fostered Education

Some account of the growth of public expenditure on education in this country is of interest both because it affects our pockets and since it indicates, as nothing else can, the progress of State interest in educational matters. In 1851 the total Parliamentary grant for education amounted to no more than £150,000. By 1870 it had risen to £894,000; in 1881 to £2,200,000. These figures seem to prove the importance of 1870! It must, moreover, be remembered

SCHOOLS OF TO-DAY

that in addition to Parliamentary provision, local expenditure had reached an impressive figure, even in 1881. To-day State grants amount annually to little less than £50,000,000, and local authorities spend a further £40,000,000. The total annual provision of 1851 would now maintain our schools for fifteen hours only!

Space permits of only one further illustration of the growth of educational effort. In all the principal countries to-day education of at least an elementary character is free and compulsory. Not only may children attend efficient schools; they must do so. In this country alone approximately 6,000,000 children go to schools which are publicly controlled. Compare this position with the state of affairs existing seventy years ago. In the year 1863 the famous Newcastle Commission reported to Parliament that only one child in twenty was attending a school of whose efficiency any sort of State guarantee could be given; children going to school did so for only one hundred days in each year; the average school-leaving age was eleven! In Germany, at that time, the position was certainly better but other "advanced" countries had records very similar to our own. For many countries no figures were available. Their Governments thought the matter unworthy of investigation! Such was the state of educational affairs when Queen Victoria had already reigned for more than a quarter of a century. It is, perhaps, strange that men point to the aeroplane rather than to education as an illustration of modern progress.

How Education Has Changed

Increases in the numbers of schools and students, however, would be the veriest mockery unless the character of education had changed. Fortunately it has, and changed radically. It is not easy to discover what methods obtained seventy, eighty, or one hundred years ago. But this is certain, that in matter and in manner much present-day teaching would be unfamiliar to men of even fifty years of age. Particularly during the post-war years educationists, the world over, have set before themselves the ideal of a training for the whole man—for body, brain and mind. It has been realised that knowledge may be acquired by natural and pleasurable means, and will never be truly acquired otherwise. Almost might the watchword be "education without tears."

The whole process has been changed. Teachers are no longer ogres to be feared, but friends to be trusted, usually liked, and sometimes loved. The learning of lessons is still a task, but at least it has some relation to the life which children know and can understand. The range of subjects has been widened and, in the late years of school life, specialisation becomes possible. With all this, much greater attention

is paid to the physical and recreational needs of children. Medical inspection and treatment eliminate many common forms of juvenile complaint—defective teeth, weak eyesight, and adenoids among the number. School meals are wholly in accord with this new spirit of the times. We seek both to fit the lesson to the child, and the child for his task.

Nor have special needs been overlooked. Technical institutes provide training for the practical affairs of life. For blind, deaf and defective children schools of suitable character have been established. Manual training of various kinds has been carefully planned. By the means of ruralised schools, the most strenuous efforts are being made to attune children's minds to the particular surroundings in which they live.

Teaching Primitive Races

Finally, a word about the education of native races. For generations missionaries have devoted their lives to raising the moral and cultural level of the "backward" peoples. While it has been their primary object to spread the Gospel and to convert the heathen to Christianity, they have, at the same time, established schools for the teaching of secular subjects. Thus the missionaries have blazoned the trail of education in many parts of the world. Later, the Government has stepped in and augmented their efforts by building schools on a larger scale than the slender funds of private enterprise would allow. As a result of this education, however, several serious problems have arisen, especially in India and Tropical Africa. In both these countries, there are traditions of culture, morals and means of livelihood which have been evolved through the centuries to meet local needs. Two alternatives were open to the would-be educators, either to impose Western standards upon these native races or to build upon their own culture. Unfortunately, too often the former plan was adopted. In Africa, for instance, the main occupation of the people is concerned with agriculture in some form or another. But the education provided has been based, especially in Secondary Schools, upon a Western model. Thus the native is given a smattering of Western culture which makes him discontented with his natural environment, and leads him to leave the villages and seek jobs in the towns. He soon finds, however, that there are no jobs available, and is compelled to return to his village, complete with a secondary school education but no proper equipment for a life on the land. Fortunately many enlightened educationalists have seen the great disservice which is being done to the native, and attempts are now being made to evolve syllabuses more in keeping with his real needs, and thereby to repair many past blunders.

SCHOOLS OF TO-DAY



E.N.A.

HIGH NOTES IN PAPUA

This schoolroom in far-away Papua has many resemblances to our own school days. Blackboard and easel and atlas on the wall point to the efforts of missionaries to teach some of the elements of the three R's to these fuzzy young Papuans. But all is not hard work, unless this class finds the mysteries of tonic-sol-fa as difficult as some English boys and girls.



E.N.A.

YOUNG COOLIES AT SCHOOL IN TRINIDAD

In sunny Trinidad, the climate is so delightfully warm that many school days are spent in outdoor schools, which are merely rush roofs on bamboo poles. But in the rainy season it is often impossible for children to walk to school in comfort and even safety. At certain seasons of the year many children assist farmers in the tillage of land or harvesting of crops.

SCHOOLS OF TO-DAY



E.N.A.

TURBANED SCHOLARS OF PESHAWAR

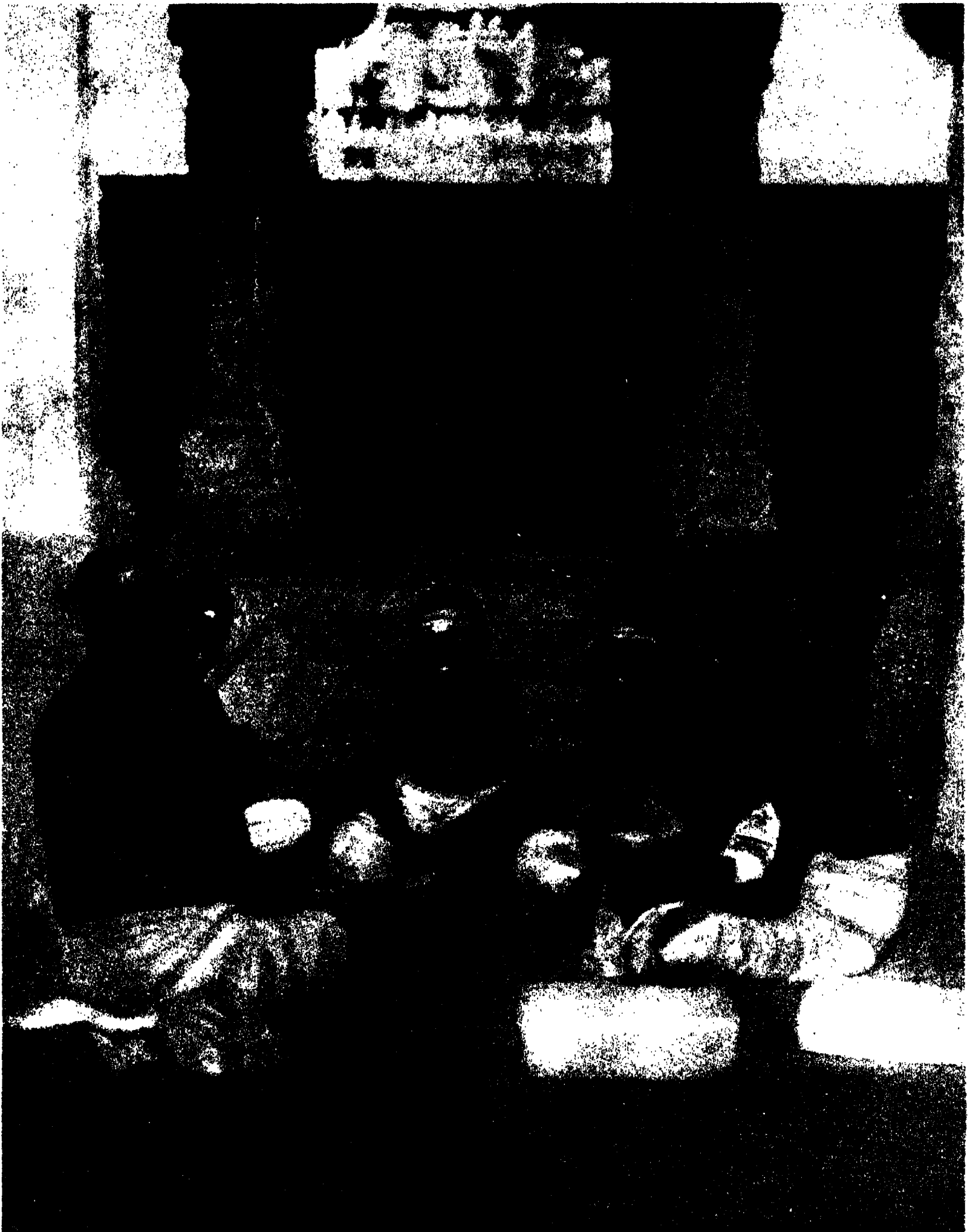
The population of India is more than three hundred and fifty million people. Is it any wonder that only 14.6 per cent. of males are literate and 2 per cent. of women? But progress is being steadily made, and here, for instance, we see a high school at Peshawar in the North-West Province. Most of these students will eventually proceed to Indian Universities.



E.N.A.

AN INDIAN DOMINIE TAKES HIS WORK SERIOUSLY

But the greatest problem which has to be overcome before an effective educational system can be established in India is religious. Hindus and Moslems are poles apart, and in spite of many attempts to break down the barrier, unity of purpose and action has not been attained. The growth of education, it is sincerely hoped, will in time solve even this problem.



E.N.A.

A TEMPLE SCHOOL WITHOUT DESKS

For centuries before the State interested itself in education, churches and temples were the source of knowledge to which the privileged went to learn how to read and write and to learn about their religion. In India there are still many schools attached to the temples, and here we see a class of earnest students at the Temple Schools at Rameswaram, Madras, India.

SCHOOLS OF TO-DAY



A VILLAGE SCHOOL IN A STREET

In Burma, the Buddhist monks regard it as part of their duty to teach, and as a consequence there is a higher standard of literacy than in any other part of India, 51 per cent. of males and 11.2 per cent. of women being able to read and write. Burma is naturally proud of this attainment.

E.N.A.



E.N.A.

WHERE PUPILS SUPPORT THEIR TEACHERS

The teachers of India are probably the worst paid people in the world. The pay ranges from about 12s. per month in Bengal to £4 per month in Bombay. In many village schools the pupils supply their teachers with food and clothing, which contributions make it possible for him to carry on his duties. The standard of teaching varies very considerably.

"KEPT-IN" OUT-OF-DOORS IN PERSIA

Persia, from the point of view of education, is definitely backward, since only 9 per cent. of the population attend primary schools, and only 1 per cent. the secondary schools. This Persian boy obviously finds writing very difficult since he has been kept in after hours to do his work again. The school is held in the street and in full view of passers-by.



E.N.A.



E.N.A.

LESSONS IN FAIR KASHMIR

In the terrific heat of an Indian summer, those who can leave the plains for the hills of beautiful Kashmir. Even so, the climate is unsuitable for English children, and most young people are sent home to schools in England. But these Indian children do not seem to worry as they learn to read in the open air, seated in a circle round their school teacher.



A SCRIPTURE LESSON IN DAMASCUS

E.N.A.

The Koran is to the Mohammedan what the Bible is to the Christian, and as English children learn about the life of Christ, so Mohammedans read about the Prophet Mohammed. Here we see a lesson in the Great Omayyade Mosque, Damascus.

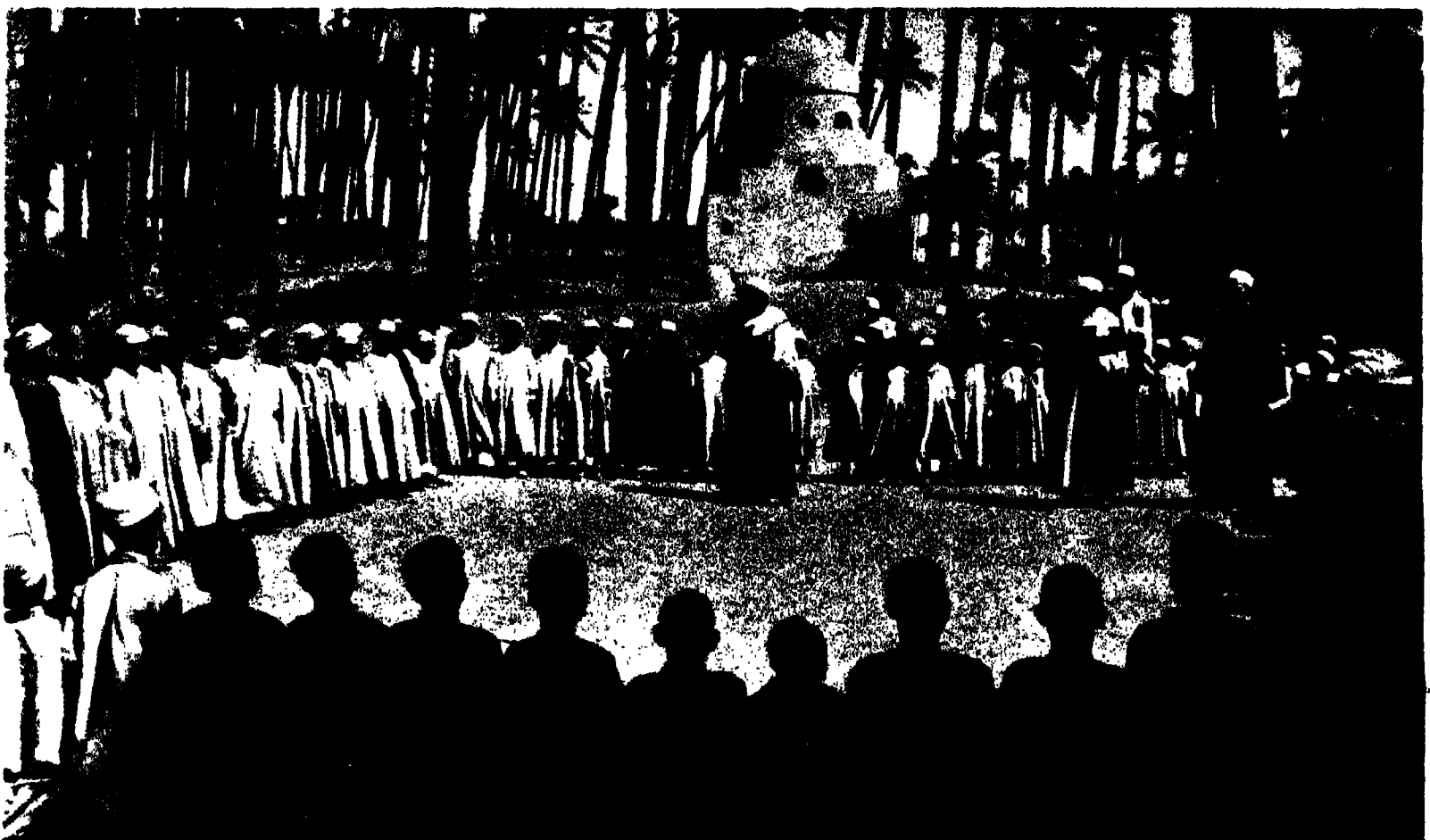
SCHOOLS OF TO-DAY



WHERE THEY TAKE OFF THEIR SHOES TO STUDY

E.N.A.

When a Mohammedan is about to enter a Mosque he leaves his shoes outside as it is not allowed to take the dust of the streets into the sacred precincts. These young Arabs have left their shoes at the edge of the carpet upon which they sit.



A SCHOOL IN AN OASIS

E.N.A.

The school shown in this picture is situated in the heart of a forest of date palms. In the background is the tomb of a holy man. The Egyptians are taking education seriously, and numerous open-air schools are now to be found in Egypt.

SCHOOLS OF TO-DAY



E.N.A.

A DESERT SCHOOL FOR GROWN-UPS

Every good Mohammedan must learn to read the Koran, and if he is very devout, make a pilgrimage to Mecca at least once before he dies. Here is a band of Arabs learning, among other subjects, to read the words of the Prophet. Their daily prayers consist in reciting certain portions of the Koran as they face towards the East with bodies prostrated to the ground.



E.N.A.

HANDS UP IN TROPICAL AFRICA

The figures on this blackboard are like those that might be found in any of our schools, and yet this picture was taken in Tanganyika in Africa. These natives have no use for any education which does not teach them arithmetic and English.



E.N.A.

THE BLANKETED BOYS OF BASUTOLAND

In all parts of Africa, the natives attend school with the one desire to learn all they can from Western civilisation. They are convinced that education will open up a new world which is at present occupied by the white man. Unfortunately they are too often unfitted for their normal lives and cannot find an opportunity to use their education to best advantage.



E.N.A.

BLACK AND WHITE IN SENEGAL

Here is quite a different type of school. Native soldiers are among some of the finest in the world, and with the aid of white officers, control large territories of country. This school is for soldiers' children at Rufisque in Senegal. Note the French officer and the white children. It is interesting to notice that the white children have to wear hats in the sun.

SCHOOLS OF TO-DAY



E.N.A.

ARMED WITH CANES IN NIGERIA

The existence of numerous languages adds considerably to the difficulties of organising an educational system in most parts of Tropical Africa. In Nigeria, for instance, native teachers are being trained in Yoruba, Ibo, and Efik. The demand for education is increasing so rapidly that there are now more schools than suitable teachers to staff them. A silent revolution is taking place throughout the whole African continent, the outcome of which will affect the lives of millions.



E.N.A.

WHERE SCHOOLMASTERS SMOKE OPIUM

Korea, where this picture was taken, is a country of further Asia consisting of a peninsula and about two hundred islands. Progress of any sort is difficult in such a country, and for centuries civilisation stood still. The Japanese, however, have abolished the old Chinese system of education, and the few remaining opium-smoking teachers will soon be a mere memory.

SCHOOLS OF TO-DAY



E.N.A.

WRITING WITH BRUSHES IN JAPAN

Perhaps no country in the world has made such rapid material strides during the past generation as Japan. Her thickly populated areas are highly industrialised, and the value of education in the creation of a new outlook has been realised. Unlike Turkey, however, the traditional form of writing, as seen in this picture of a kindergarten school, is still maintained.



E.N.A.

A SCHOOL WITHOUT FORMS

In other directions, however, Japan is absorbing Western ideas. In industry and commerce up-to-date methods have been adopted, and the schools are preparing the youth of the nation to compete with the rest of the world. At present, the workers receive a low standard of wages, but it is inevitable that education will lead to a demand for better conditions.

SCHOOLS OF TO-DAY



F.N.A.

EDUCATION BY LAMP LIGHT

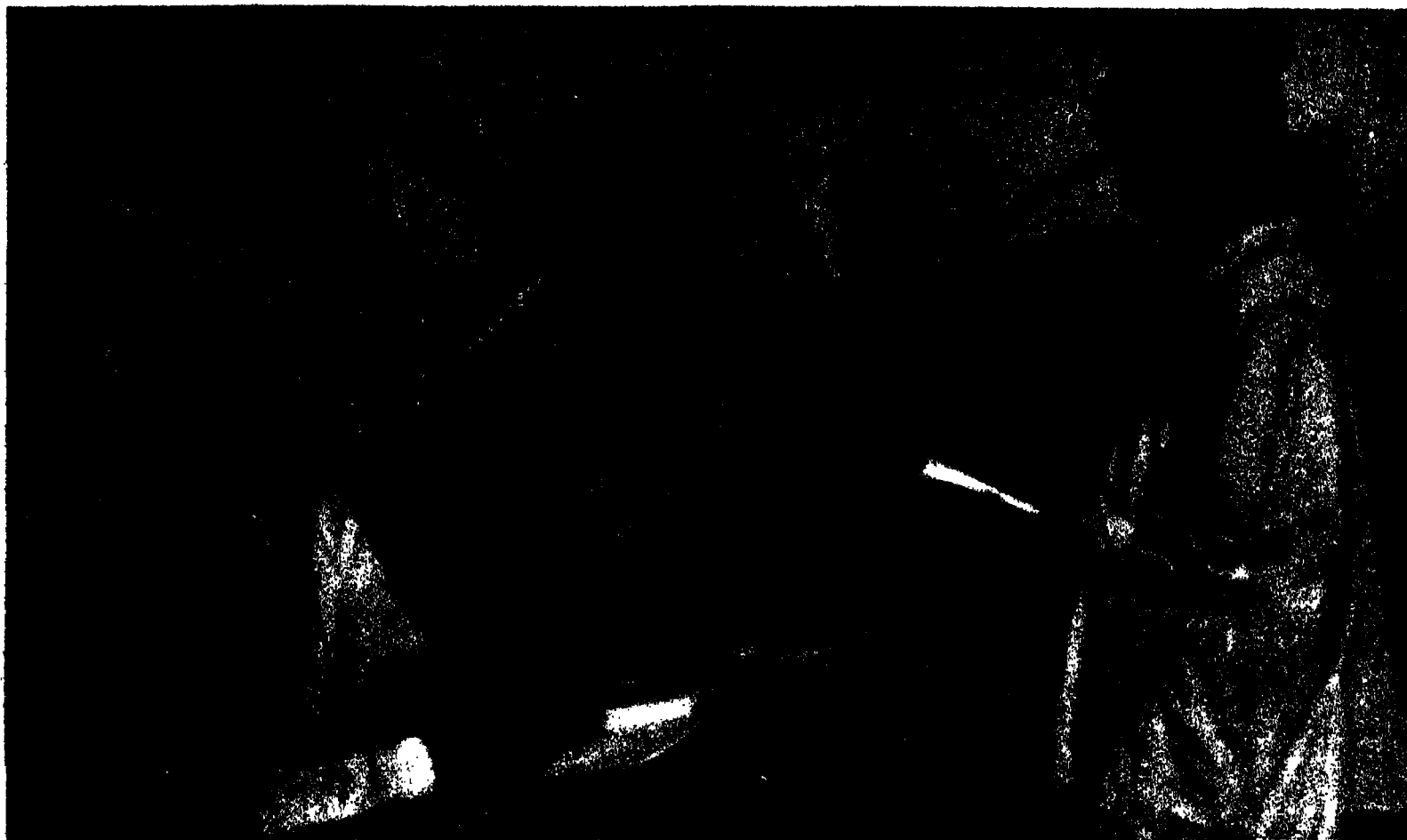
This crude-looking classroom in Peking is an eloquent testimony to the awakening which is taking place throughout the vast country of China. For countless centuries China has not moved, but to-day, as shown by these coolies and manual labourers busily at work, the days of traditional inertia are numbered. With the abolition of the pigtail, China definitely broke with her past. There is still need, however, for strong government.



F.N.A.

A COUNTRY SCHOOL IN UZBEKISTAN

For centuries the Russian peasants were completely illiterate, but to-day a colossal attempt is being made to set up an educational system which will raise the whole cultural level of the peasant classes. It is fully realised that machinery needs intelligent handling, and that agricultural development cannot take place unless the peasants receive an effective education.



E.N.A.

MOHAMMEDAN GIRLS IN A RUSSIAN SCHOOL

In Russia, religion is no longer taught in the schools, but in Uzbekistan, the Soviet Government was faced with a religious fanaticism which it was imprudent to attempt to stamp out. Thus we see here a young and earnest woman teacher from Moscow instructing a picturesque group of Mohammedan girls in a school in Uzbekistan, a part of Russian Central Asia.



E.N.A.

WHERE MEN TEACH GIRLS

Throughout Soviet Russia sex barriers have been abolished, and both men and women work on an equal footing. Here, for instance, is a man in charge of a class of girls at Stalinbad, a town named after Stalin, the head of the Union of Soviet Socialist Republics. Throughout the world ignorance and superstition are retreating just as fast as education advances.

SCHOOLS OF TO-DAY



AT WORK ON A PRAYER CARPET

E.N.A.

In Poland there are Ukrainians, White Russians, Germans and Jews, each of whom have their own system of education. Poland is a new state founded as a result of the Peace Treaties, and already education has made rapid strides. Here we see a class of Jewish girls at a school of industrial art, engaged in making a prayer carpet, as a part of their needlework lessons.

SCHOOLS OF TO-DAY



E.N.A.

AN OPEN-AIR SCHOOL IN SUNNY SPAIN

This picture illustrates one of the chief problems facing modern Spain. Here is a typical open-air school in a country district in the province of Murcia before the civil war. Such schools are totally inadequate for the needs of a modern state and future governments of the Spanish nation will have radically to reform the existing educational system of the country.



E.N.A.

HEALTHY MINDS DEMAND HEALTHY BODIES

But the training of the mind is not the sole object of education, as modern educationalists have now discovered. It is equally important to raise the physical standards, since minds in unhealthy bodies cannot function properly. Here are seven-year-old boys at drill in an elementary school at Kief, where the value of physical training is fully realised.

SCHOOLS OF TO-DAY



E.N.A.

A "BABIES" CLASS FOR ADULTS

France has realised that a nation cannot afford to allow any section of its population to remain uneducated. Here is a class of adults in Paris who are receiving a reading lesson in one of the new night schools for adults of twenty-five years and over. All the pupils are more or less illiterate, and a large proportion of them hail from various parts of North Africa.



WHERE WORK IS PLAY

In the crowded districts of our great cities, home conditions are often unsuitable for the proper care of young children. Nursery schools provide a means whereby children under the age of five can learn healthy habits in congenial surroundings, and although work is not undertaken, the games are designed to enable the babies to learn useful lessons through play.



HEALTH AND HYGIENE IN THE MODERN SCHOOL

Large classrooms are gradually taking the place of the barrack-like buildings of the last generation. Sliding doors allow plenty of fresh air in the summer months, and well regulated heating systems keep the schools warm in winter. Medical officers have already noticed the great change in the physique of children who are working under the newer conditions.



TRAINING SKILLED CRAFTSMEN

The tremendous growth of modern mass production has affected very seriously the art of skilled craftsmanship. But in the schools to-day, woodwork, metalwork, and many other crafts, such as basketry and weaving, are being taught, so that boys and girls may learn all the processes involved in the making of an article, and derive pleasure and pride from a job well done.

SCHOOLS OF TO-DAY



WORK AMONG THE TEST TUBES

No secondary school is complete to-day without a well-equipped science laboratory, since there is hardly a branch of industry to which physics or chemistry is not being applied. From these laboratories the chemists and industrial scientists of the future are prepared, and in due time will provide new ideas and new processes for use in factory and workshop.



CAREER-BUILDING AT AN EARLY AGE

Although girls take a keen interest in science, especially botany and biology, their opportunities are greater in the field of commerce. Shorthand and typewriting are, of course, important, but with the growth of international trade, a knowledge of one or more foreign languages is an additional advantage. Thus, in countless ways, the schools are serving the community.

MANKIND AT PLAY

MAN plays as well as works, and amongst the most remarkable features of modern life are the amount of time that is devoted to sports and pastimes, the large increase in the number of these, and the degree of proficiency which has been attained therein.

The general rise in the standard of living throughout the greater part of the world, and particularly in Europe and America, has rendered possible the participation of the average person in certain forms of sport which have, in consequence, become very widespread, and very popular. Such, for instance, are cricket, football, golf, tennis and hockey in Britain, and baseball and lacrosse in the United States and Canada respectively—not to mention various forms of exercise.

Sports That Have Travelled Round the World

Two of these sports, golf and lawn tennis, have made enormous headway within the last few years, and are now popular not merely in Britain and the British Dominions and Colonies, but in America, North and South, throughout Europe, and in all parts of the world where Europeans and Americans are domiciled. They have, in fact, spread to Asiatic communities such as the Japanese, Chinese, Indians, Burmese, Siamese, Singhalese, and Malays, though generally only among the leisured classes of these peoples, and especially where they have come into contact with Europeans or Americans. It is significant that no health resort is considered first class nowadays unless it has provision for both golf and tennis.

A direct result of this popularisation of sport is the habit of watching the play *en masse* in certain games, particularly those of cricket, football, tennis, baseball, and lacrosse. This habit draws thousands of people out into the open air and sunshine, and is health-giving to that extent. Another result is the wider invasion of the amateur world of sport by the professional. Such large sums are at the disposal of sports clubs, noticeably in football, that these clubs can offer to players terms so substantial that they form a very strong attraction to the brilliant amateur to turn professional.

Other forms of sport holding their own in Britain are hunting, despite strong opposition from humanitarian organisations, coursing, game-shooting, and angling, the latter having received a strong stimulus of late in deep-sea fishing for tunny off the Yorkshire coast. Angling may be termed, like hunting, a universal sport, and many British anglers go far afield—to Norway,

Sweden, Finland, and other European countries, and to Canada, Newfoundland, and elsewhere, in search of trout and salmon, whilst the Florida coast and certain of the West Indian islands, are much patronised for the sport they afford in the capture of big sea fish; while the rivers of India are noted for their mahseer. So, also, sportsmen are found stalking big game in the reserves of Kenya and Uganda, in the jungles of India and Malaya, on the veld of South Africa, in the Canadian Rockies, and in other parts of the world.

Among circles more or less limited to Britain, such sports flourish as bowls, roller-skating, racquets, badminton, quoits, croquet, fives, polo, rifle shooting and archery, and a movement which has gained ground very considerably during recent years is that of winter sports. The climate being generally unsuitable for these in Britain, numbers of people visit Switzerland, France, Austria and Italy, and even Norway and Sweden, for this purpose. The most popular form of winter sport is, undoubtedly, that of ski-ing. Skating has many devotees, augmented by those who learn the art on artificial ice-rinks. Tobogganing, on luge and bobsleigh, is a special attraction, especially for the highly-skilled. The Cresta Run, at St. Moritz, is the world's most famous toboggan run. Curling maintains its fascination amongst the middle-aged and elderly. Ski-jumping and racing meetings draw large crowds, figure-skating and speed contests also; whilst ice-hockey, the fastest of combined sports, provides some thrilling scenes for players and spectators. In Canada and Sweden ice-yachting and skate-sailing are also popular winter sports; sleighing is very general in North America and in many European countries in the winter time where there are sufficiently heavy snowfalls.

Queer Sports of Many Climes

Among popular forms of sport in other countries one must mention pelota, one of the oldest forms of a ball game in the world, at one time peculiar to the Basques—of France and Spain, from whom it has spread to the Spanish of Spain and of South America, bull-fighting in Spain and Portugal. In some Eastern lands bull-fighting appears rather as a contest between the animals themselves; a variant of this is ram-fighting. Cock-fighting is very prevalent in parts of the Malay Archipelago, quail fighting, falconry and pigeon flying in India. Kite-flying is an adult pastime in India, China, Burma and other Eastern countries, where also are found a kind of ball game, which consists in keeping a

MANKIND AT PLAY

ball in the air with blows from the feet, and animal races, notably with bullocks.

Of the various forms of exercise, taken in company or alone, the most notable development in Britain and certain other European countries in recent years, is that of hiking. It has the great advantage of enabling a person to see the countryside at a low cost (in some countries specially cheap hostel accommodation for hikers is provided), and to obtain health and exercise in doing so. Mountaineering has made headway, but Everest remains unconquered except by air. With the enormous increase in the number of motorists and the popularity of motoring, which has led to a great extension of motor and motorcycle racing, riding no longer holds its former position. Horse-racing, however, more than holds its own, and dog-racing has now caught the public fancy; and whilst yachting and rowing, punting and canoe-ing are as popular as ever, a rival has arisen in motor-boat racing, and aeroplane racing commands a good deal of public attention. Swimming, with its attendant pastime of water-polo, has received a fillip as a result of the tremendous enthusiasm in this and other European countries, and in North America, for sea- and fresh-water- and sun-bathing. This is all a part of what one may term the open-air and sunshine movement, which has for its aim the attainment of health and pleasure by exercise in the open air, with the minimum of clothing; in its extreme form it has given rise to nudism. It is, undoubtedly, of immense value to the health of the people, especially since it includes various forms of physical exercise, and encourages athletic sports, so that we are likely to witness in the years to come a greatly-increased interest in running, walking, jumping, weight-putting, cycling, and other forms of athleticism, whilst it may well be the means of extending the scope of boxing, which retains its popularity and widespread public interest, of fencing and of wrestling.

Among indoor pastimes, bridge certainly is the favourite, and is played in one or the other of its two forms, contract and auction, in every city of any size all over the world. Billiards ranks a good second, with its attendant game of pool; there is a popular American form of billiards played on a table without pockets. Chess, one of the oldest games in the world, known to the Egyptians and Babylonians, the ancient Romans and Greeks, and with various schools of play, is universal, and its sphere, during recent years, has been greatly extended. Games of a similar nature, such as draughts and dominoes, hold their own, and backgammon, played in England in the time of Chaucer, has again come into fashion in Britain. Ping-pong, or table tennis, once very popular, is now regaining some of its ground, and the game of darts finds a good deal of favour amongst the masses.

The once familiar winter indoor game of charades is little known nowadays, but acrostics, a favourite pastime in ancient Greece and Rome, flourishes still, though its domain has been invaded widely by crossword and missing-word competitions. Another modern innovation is the puzzle competition, of greatly-varying kinds.

The pastime of gambling, or of gaming, is illegal in any form in Britain other than that of betting on horse- or dog-racing, or on the results of football, or other matches, but it flourishes in many Continental countries, notably in France and Italy. It is common in India and throughout the East, and the Chinese, in particular, are very fond of card, dice, and other gambling games, a favourite game being known as *poh*. The principal games played in the large Continental casinos, such as those of Monte Carlo, Nice and San Remo, are baccarat, faro, roulette, *rouge et noir*, and *chemin de fer*, in which it is possible to win or to lose very large sums of money. In the long run the croupier wins.

EDWARD G. LONG, C.B.E.





A. Steiner

'THE ELUSIVE CHAMOIS ON AN ALPINE HEIGHT

Mountain climbing has always appealed to the adventurous spirit in man. -Chamois hunting not only includes the dangers attached to climbing, but also needs the utmost patience and skill. The chamois seems to *feel* the presence of an enemy, and the slightest mistake sets him off at lightning speed. The picture shows a hunter searching for chamois with his telescope.

MANKIND AT PLAY



G.P.A.

A TIGER HUNT IN BENGAL

Big game hunting, on the other hand, is an organised pastime. Here we see elephants which have completely encircled that most magnificent of all animals—a Bengal tiger. The enraged beast hides crouching in the long grass as the circle gets smaller and smaller—and at last he will spring in a vain attempt to save his life, with little chance against so many shots.



G.P.A.

A MIGHTY HUNTER IN THE MAKING

This little Mexican Indian is learning to use the traditional weapon of his tribe—the bow and arrow. When he grows up he will hunt with his father, and although every moment will provide a thrill, the primary necessity is food. It is only when food is abundant that hunting continues as a pastime. When failure to kill spells hunger, much practice is necessary.



A SILHOUETTE IN ZULULAND

G.P.A.

The semi-savages of Zululand live in the remote bush. These stalwarts are starting out to hunt game, but with such address that the necessity to provide food for their tribe becomes a sport. In spite of the inroads of Western civilisation, they are still a fine race—fearless in battle, but faithful in times of peace. They will even tackle a full-grown lion single handed.

MANKIND AT PLAY



G.P.A.

COCK FIGHTING AS A NATIONAL SPORT

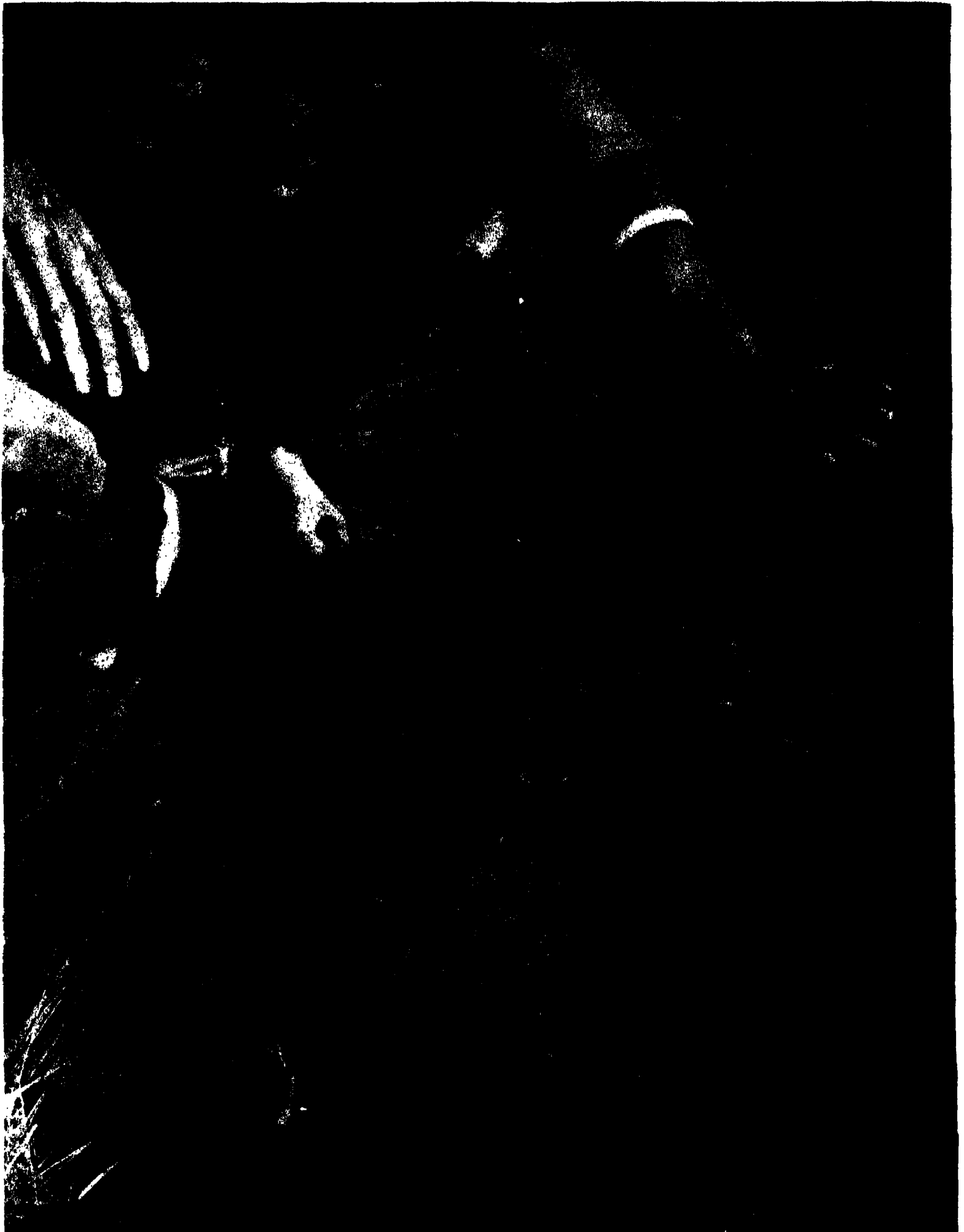
Cock-fighting is no longer legal in England, but in Bali, in the Dutch East Indies, it is the national sport. It is also of considerable religious significance, since the Balinese believe that the blood spilled by the chickens will keep away evil spirits.



G.P.A.

WHERE "CHESS" IS PLAYED WITH BEANS

Chess is one of the oldest games in the world, the origins of which are lost in the remote ages of China's ancient history. These natives of Portuguese West Africa know nothing of kings, queens, castles, bishops, or pawns, but use beans.



Wide World

DIGGING UP AN ANCIENT GAME

Many games are traditional, being handed down from generation to generation. Here we see some ancient rock markings in Northern Rhodesia which show the great antiquity of a game called "Foruba," which is not unlike Solitaire, a game played with marbles on a board. This game is still played by the natives, who maintain the ancient traditional set of rules.

MANKIND AT PLAY



INDIAN WRESTLERS IN TRAINING

Wrestling in one form or another is known in most parts of the world, both for sport and defence. The Japanese specialise in Ju-Jitsu, while in Cumberland there are special rules which are peculiar to the county. Normally, however, there are recognised "holds" and "throws," and here we see soldiers of the Indian Army practising before their instructor.



BASKET FISHING IN FAR-AWAY SIAM

From being a pure necessity, fishing has developed into one of the most universal of all sports. Wherever there is salt or fresh water containing the least trace of a fish, man has used rod and line to pit his skill and patience against his elusive and hidden quarry. These Siamese fishermen, however, use enormous nets on long bamboo poles, which they let into the water.

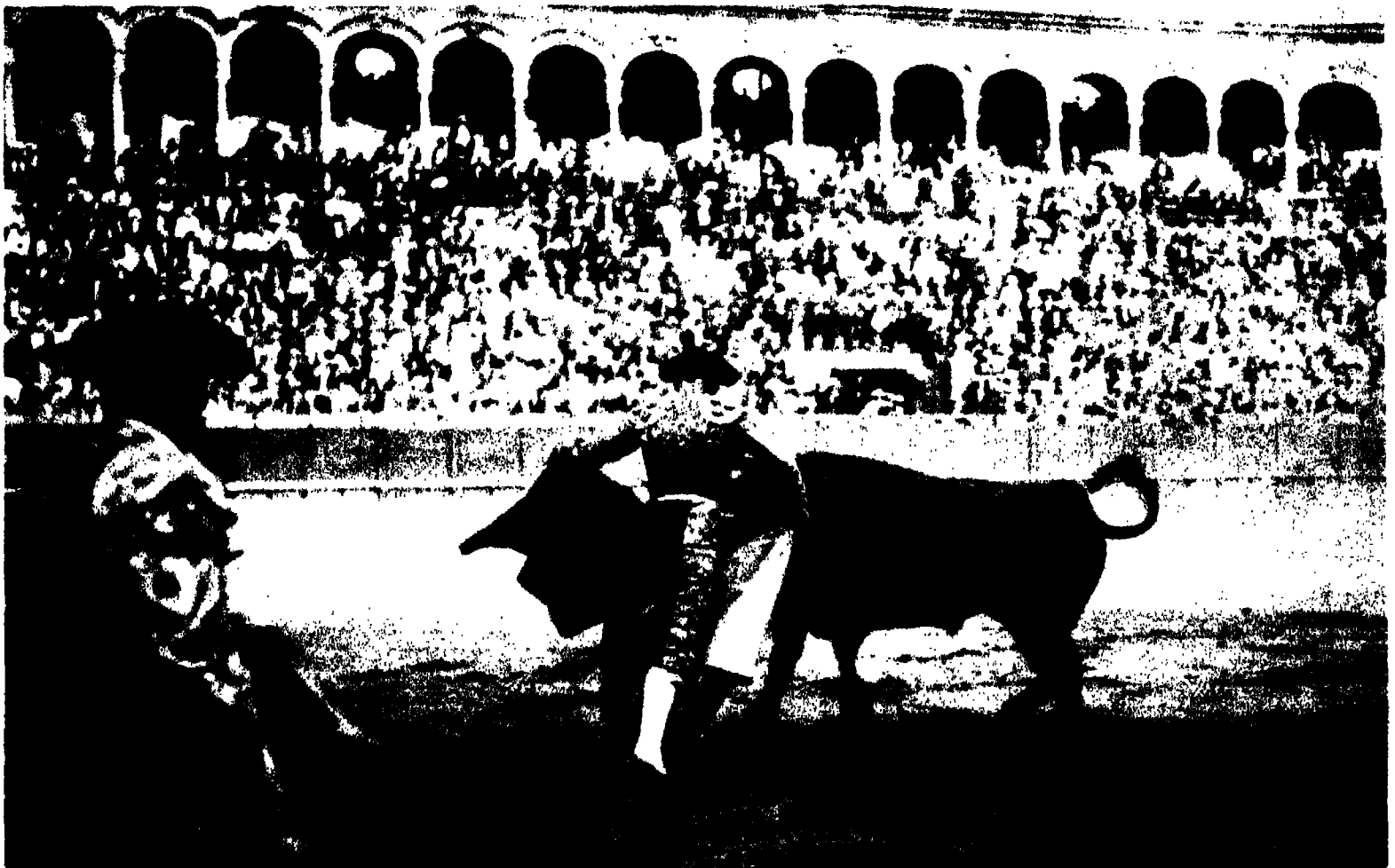
MANKIND AT PLAY



Wide World

A "BAMBOO JOUST" IN JAPAN

Fencing is among the most aristocratic of all games. The "bamboo joust" is a class of swordsmanship which is one of the time-honoured pastimes of Japan. During the joust the contestants wear a white kimono and a heavy wadded "sampler" to protect the body, while the hands are covered with heavy horsehide, and the head with a mask like a rat-trap.



Wide World

THE TOREADOR PRICKS THE BULL TO FRENZY

In spite of much enlightened opposition, bullfighting is still the national sport of Spain, although football is fast becoming a more worthy rival. Here we see a Toreador further enraging the already maddened bull, and although the Toreador occasionally gets worsted, the odds are heavily against the bull. The goring of horses is a particularly cruel feature.

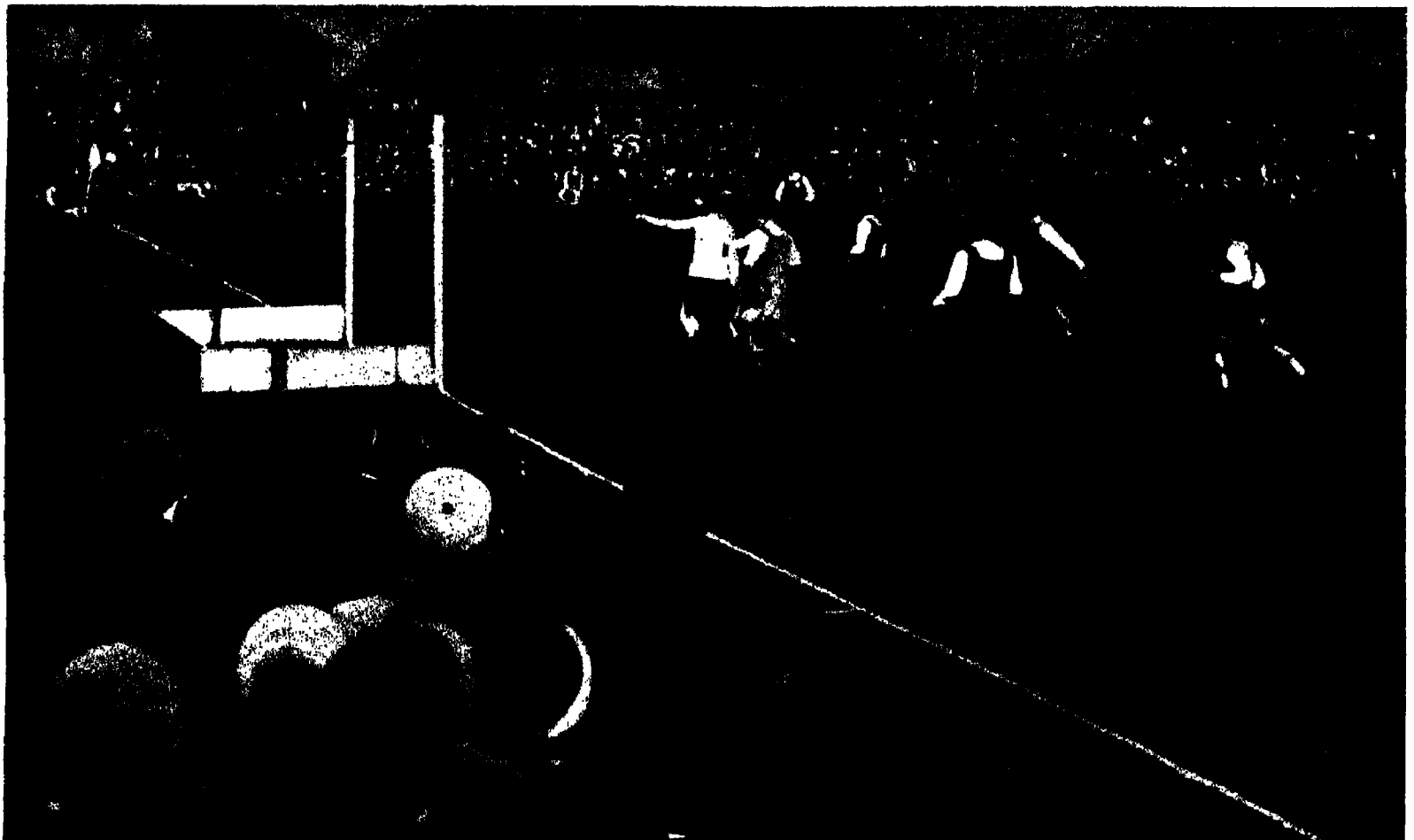
MANKIND AT PLAY



G.P.A.

HOCKEY AS IT IS PLAYED IN PARAGUAY

Did we learn hockey from these Paraguayans, or did they learn from us? South American hockey is rough stuff, yet these Lengua Indians derive much enjoyment from it. They probably do not worry about "sticks" or finer points in the game.



Sport and General

WOMEN ON THE FIELD OF SPORT

During the past few years, the popularity of hockey has steadily increased, especially among women. International, county and club matches draw considerable crowds, as can be seen in this picture of a game between England and Scotland.



THE FASTEST GAME IN THE WORLD

Canada is the home of ice hockey, which is the fastest game in the world. The natural advantages possessed by the Canadians are now being met by the erection of artificial ice rinks in many parts of Europe, and particularly in England, where teams have been formed which are now capable of contesting successfully with the best of Canadian sides.



CURLING ON A LAWN OF ICE

Curling is another very popular game on the ice. Said to have originated in the Netherlands, it has been played in Scotland for over three centuries, and has also spread to Canada. Although played on ice, it resembles bowls in principle—that game which even the near approach of the Spanish Armada Sir Francis Drake would not allow to interrupt.

MANKIND AT PLAY



Wälsch

HIGH JUMPING ON SKIS

Winter sports provide a playground for the Western world. Here, for instance, are 80,000 onlookers at the international ski-jumping contest near Oslo, the capital of Norway. Great skill and nerve are required to negotiate this famous jump.

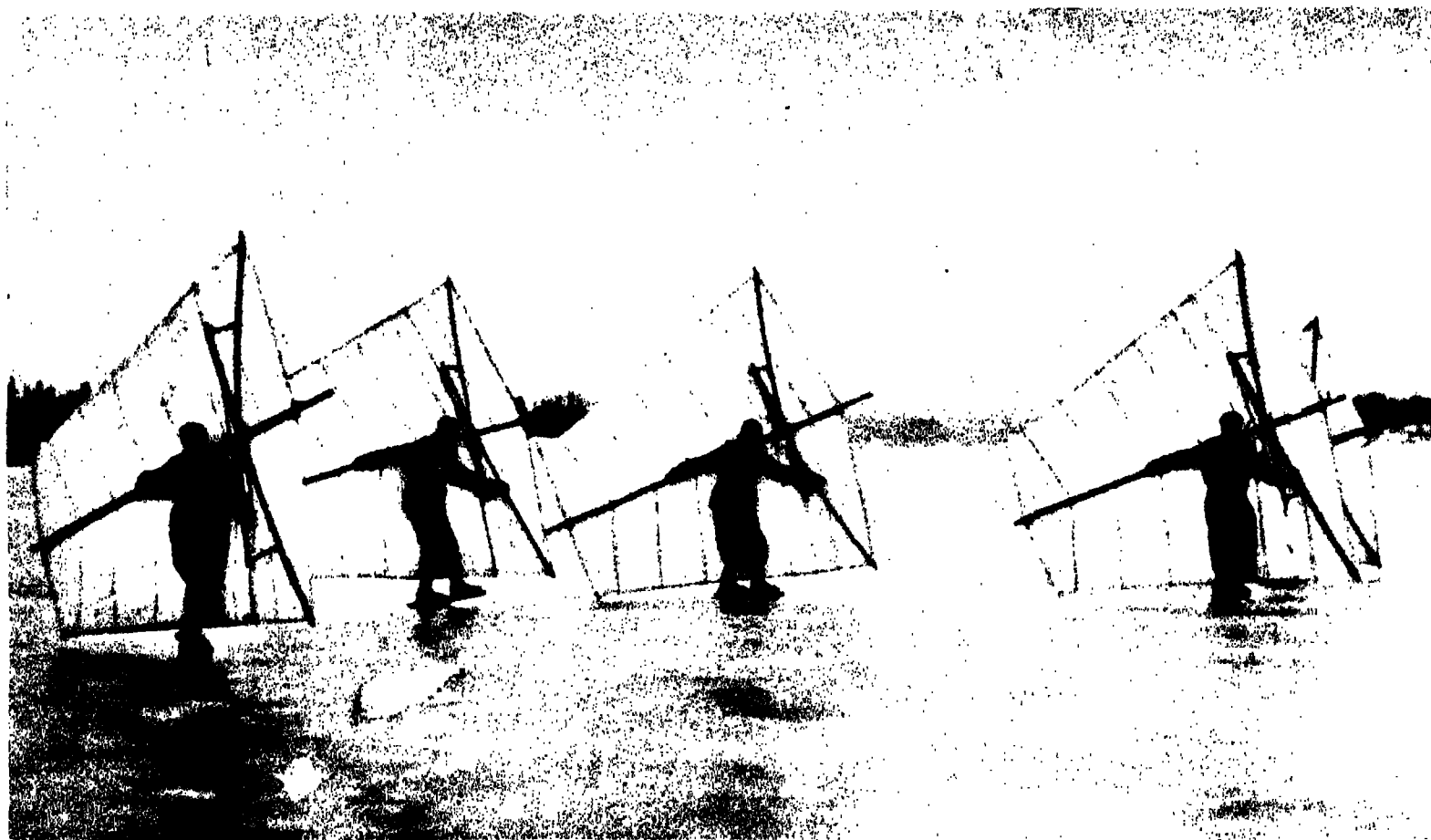


A. Pedrell

THE WHITE HEAVEN OF PITZ PALU

The ridge of Pitz Palu in Switzerland is one of the greatest and most difficult climbs over a very long and extremely steep ice wall. An intrepid party of climbers—like pigmies on its giant face—are nearing the top of the first peak of this mountain.

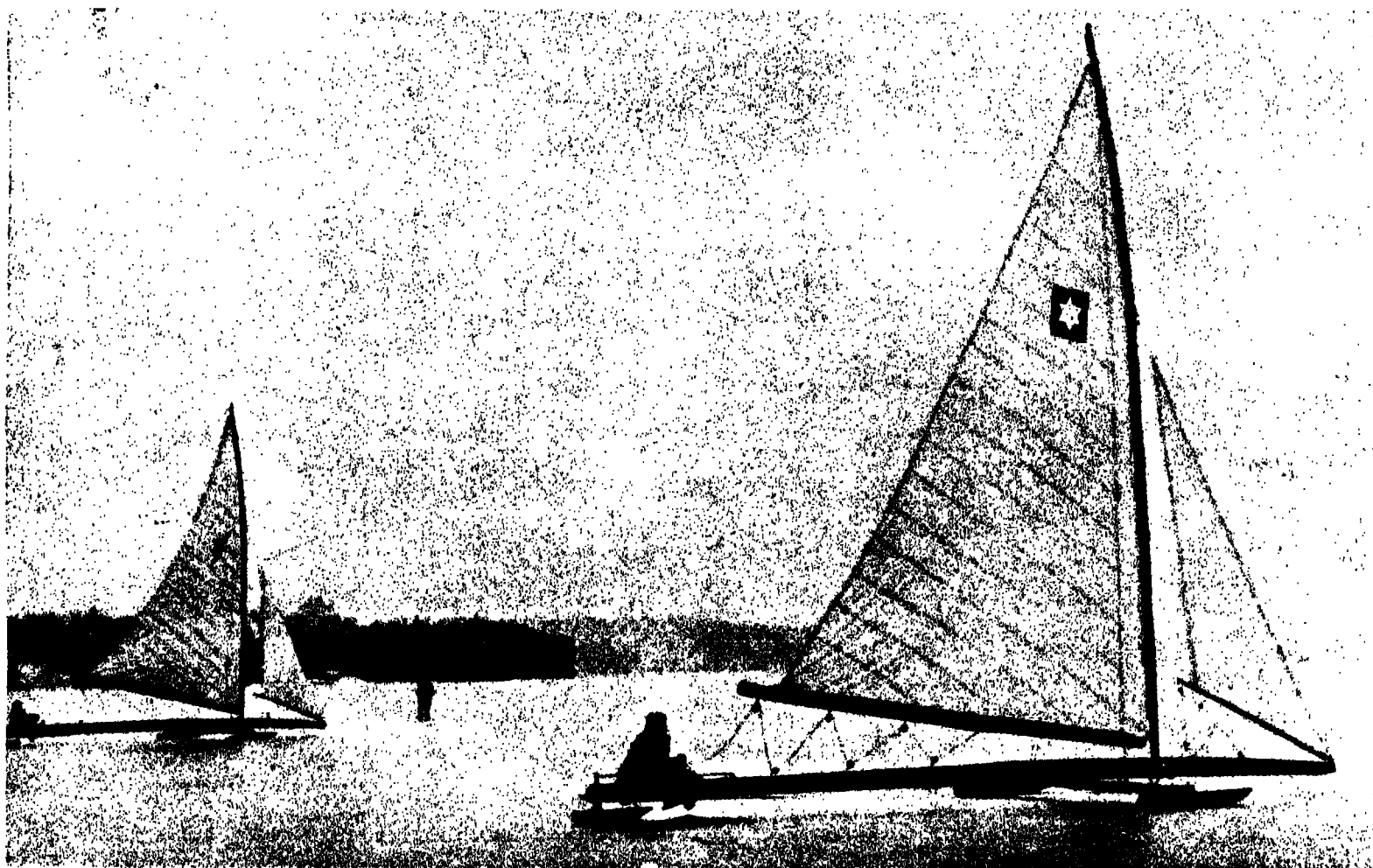
MANKIND AT PLAY



Bertil Norberg

HUMAN SHIPS ON A SWEDISH LAKE

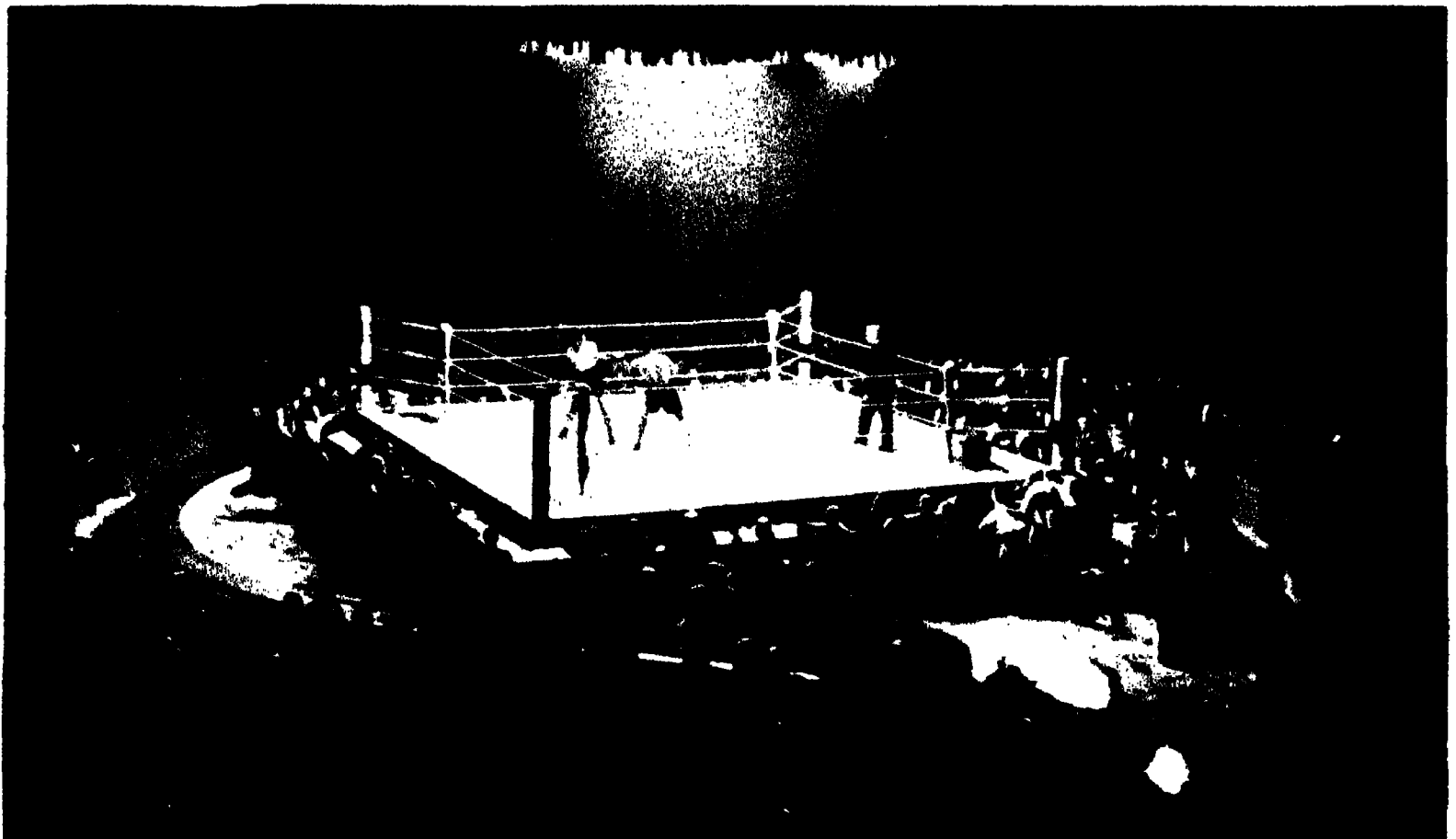
Ice provides many thrilling sports, but few more fascinating than skate-sailing. These competitors are preparing for a skate-sailing contest on the magnificent reaches of one of Sweden's lakes. An error of judgment results in a nasty spill.



Bertil Norberg

WHITE WINGS OVER THE ICE

Ice-yachting is one of the most popular of winter sports. The speed at which these fragile craft travel demands a highly developed skill in their management. In countries where there is not ice, sand-yachting, although not so fast, is popular.



Sport and General

THE NOBLE ART OF SELF-DEFENCE

In city, village, or tiny hamlet, boxing has always been a very popular pastime. Many are the thrilling tales told of the old-time fights to a finish with bared fists, but to-day boxing is a gentler art and governed by a very strict set of rules.



Wide World

WHEN HORSE AND MAN ARE ONE

Apart from the Services, polo has never captured the popular imagination, and yet it is one of the greatest games of all. Pony and man appear to be one unit, and the rattle of hoofs in pursuit of the fast-moving ball thrills the onlookers.

MANKIND AT PLAY



E.N.A

BASEBALL IN THE PHILIPPINE ISLANDS

The close proximity of the Philippine Islands to the United States of America has surely influenced the introduction of baseball. These sturdy fellows, however, play the game without the protective paraphernalia of its American equivalent.

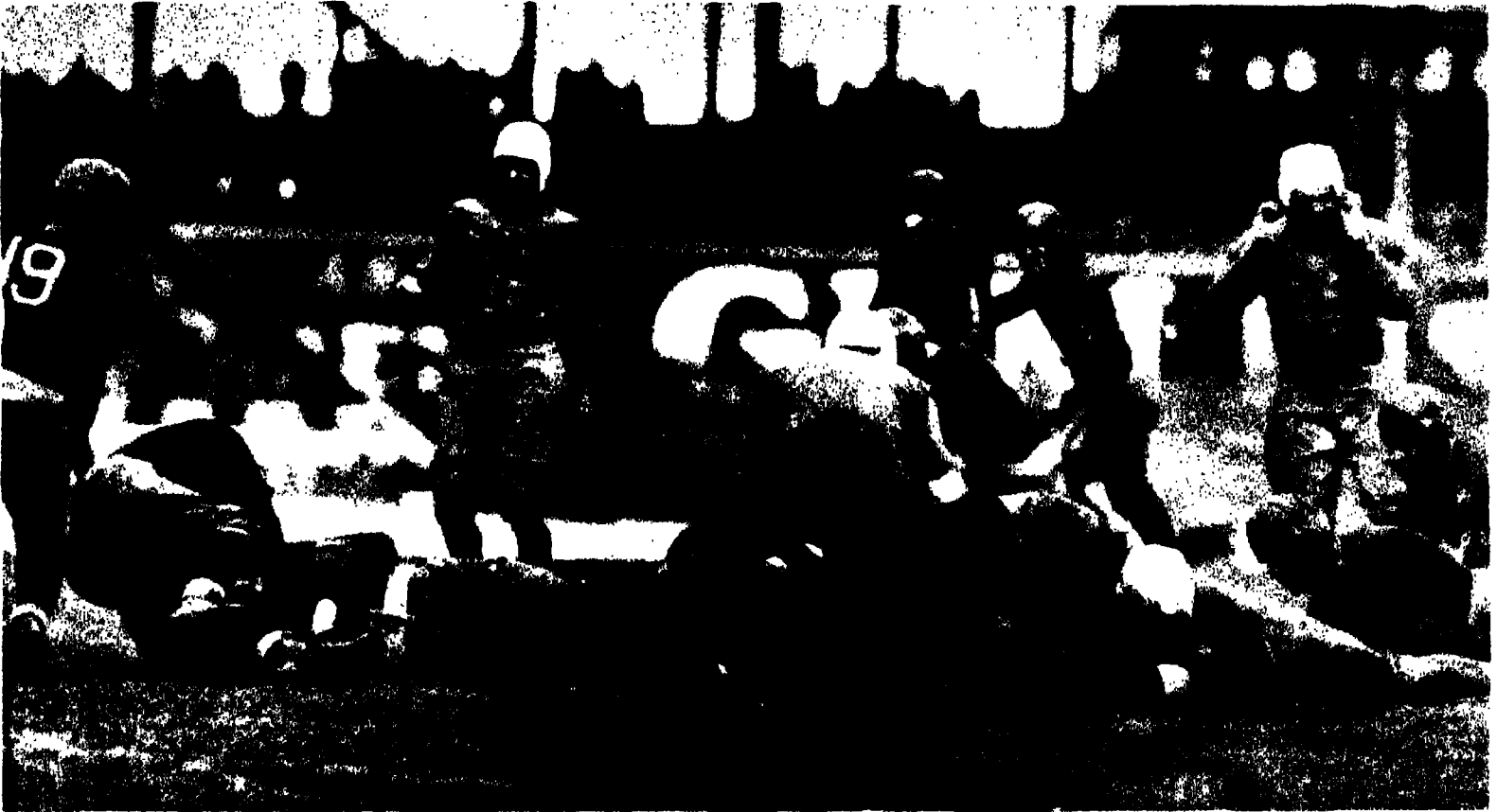


Wide World

AMERICA'S GREAT NATIONAL GAME

Baseball is often described as a glorified edition of the old English game of rounders. In principle the two games are very much alike, and undoubtedly baseball sprang from the older game. Here we see a game in progress, with a player on the extreme right waiting eagerly for an opportunity to reach the home base. The crowd and players "barrack" each other.

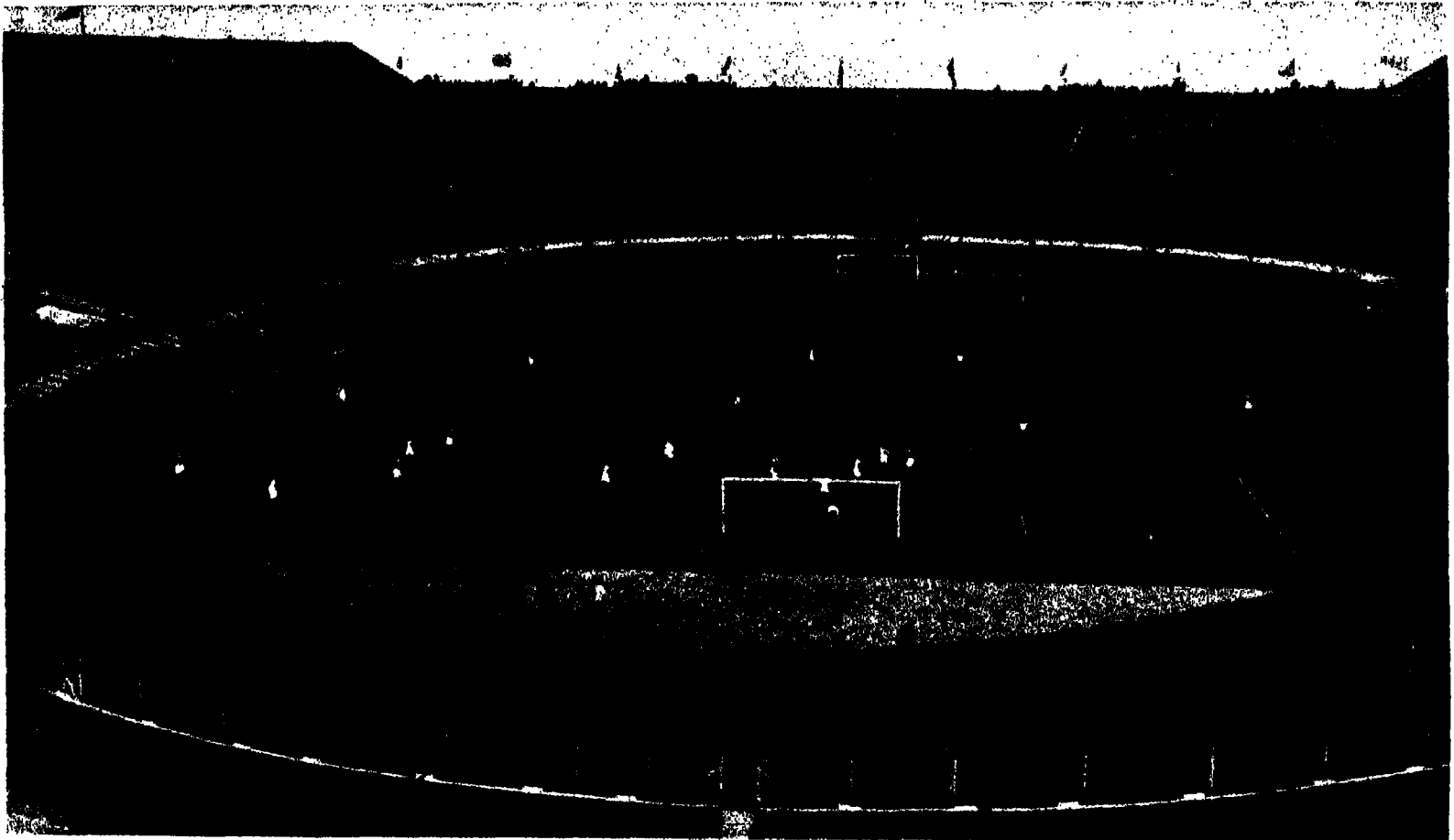
MANKIND AT PLAY



IN THE THICK OF THE BALL GAME

Wide World

American football, with a few resemblances to the Rugby code, is one of the roughest games in the world. Armour-clad giants meet with terrific impact as the ball is released, and serious injuries and a dozen or so deaths are recorded every season. To a minimum of skill is added a considerable amount of brute force in the attempt to score "tries" or goals.



THE CUP FINAL !

Sport and General

The rapid progress of Association Football throughout the continent of Europe and the South American States is an eloquent testimony to the great popularity of this winter game. Professionalism has grown enormously, but it is to the credit of all concerned that the traditional cleanness of the game, with few exceptions, has been nobly maintained. Here we see a Cup Final at the Wembley Stadium, the arena which has held the record crowd of 130,000 spectators.

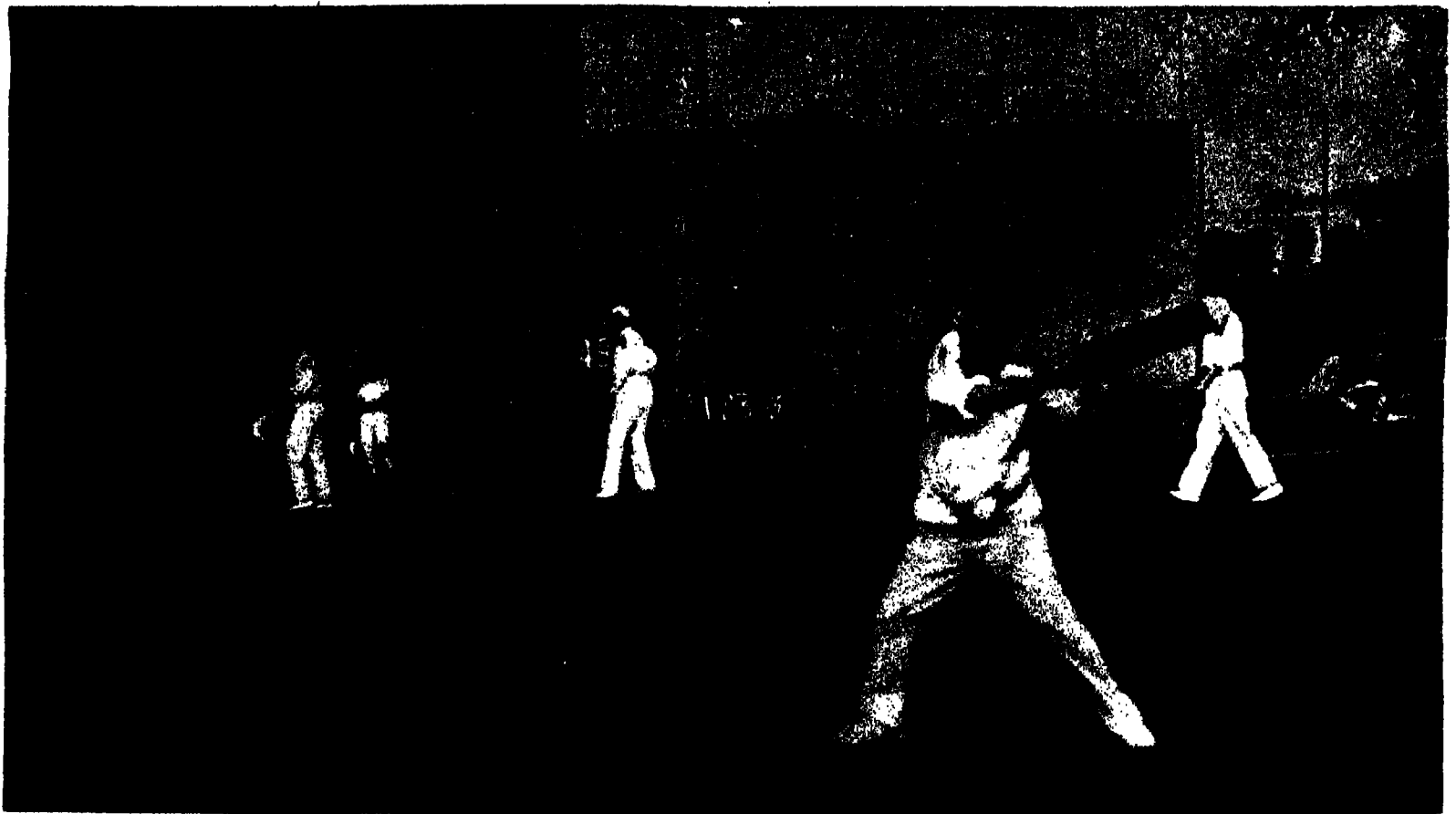
MANKIND AT PLAY



THE FIGHT FOR THE ASHES

Sport and General

Cricket is essentially a British Empire game, and has not extended far beyond its boundaries. It is, perhaps, too leisurely for Latin races, and certainly has not the same type of thrills as baseball or football. Yet the fight for the "Ashes," whether in England or Australia, draws enormous and enthusiastic crowds. County teams in this country play three-day matches



HIGH-SPEED THRILLS OF THE BASQUE GAME

Wide World

Here is a game of pelota in progress. This game is immensely popular in the Basque province of Spain—in fact, it was so popular at one time that the authorities had to forbid its being played against the cathedral walls at Barcelona! It is played against a wall, the ball being caught in the long sickle-shaped "bat" and hurled from it with tremendous force.



THE THRILL OF A FLYING TACKLE

Associated Press

Rugby football rivals Soccer in its popular appeal, being played at most of the Public Schools and Universities. In the North of England and Australia, the Northern Union version is played, teams consisting of thirteen players instead of fifteen. The fewer players makes for a faster and more open game. The Northern Union clubs are all professional.



THE GRACE AND RHYTHM OF THE PERFECT ATHLETE

Sport and General

The feats of Ancient Greece are re-enacted during the increasing number of athletic meetings which are held in all parts of the world. The realisation of the need for physical fitness is attracting the youth of nations to the running track, and in the Olympic games nation vies with nation in friendly rivalry. Every year fresh records are made—only to be beaten.

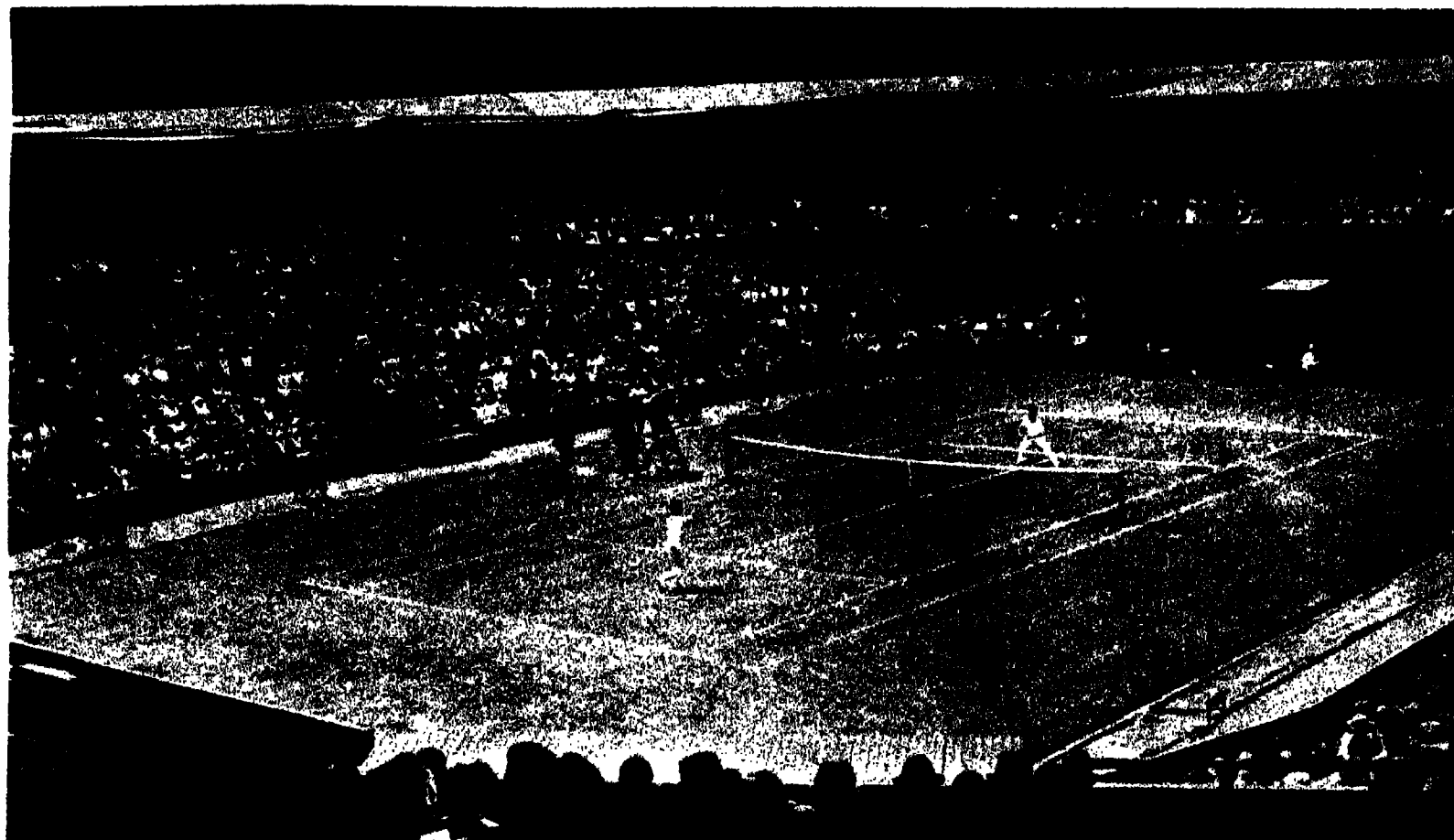
MANKIND AT PLAY



THE ROYAL AND ANCIENT GAME

Wide World

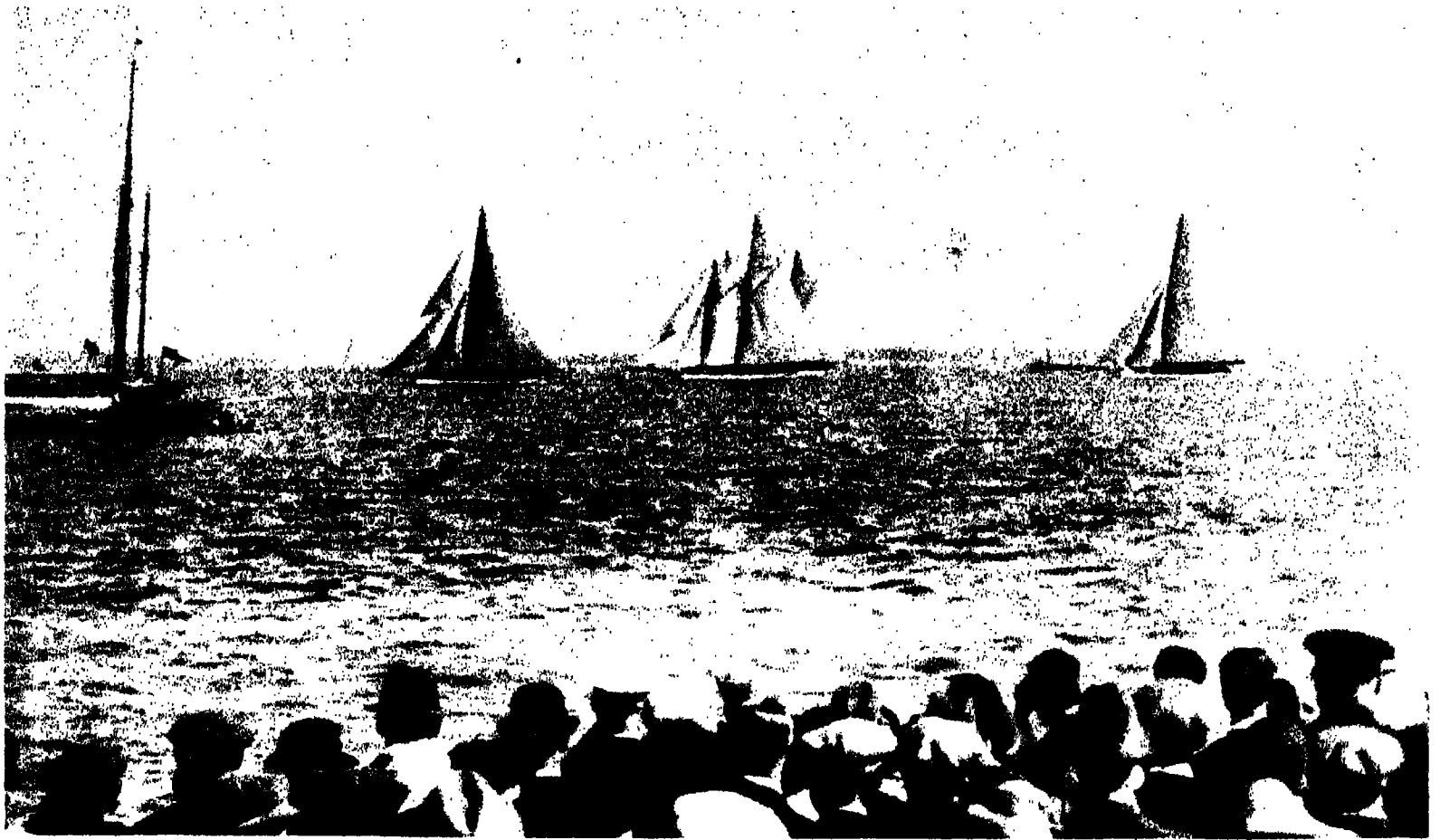
Once the game of the privileged and wealthy few, golf is now one of the most democratic of all games. Municipal golf courses are to be found in most big cities, and Scotland's national game has now become international and almost universal.



THE MECCA OF THE TENNIS WORLD

Wide World

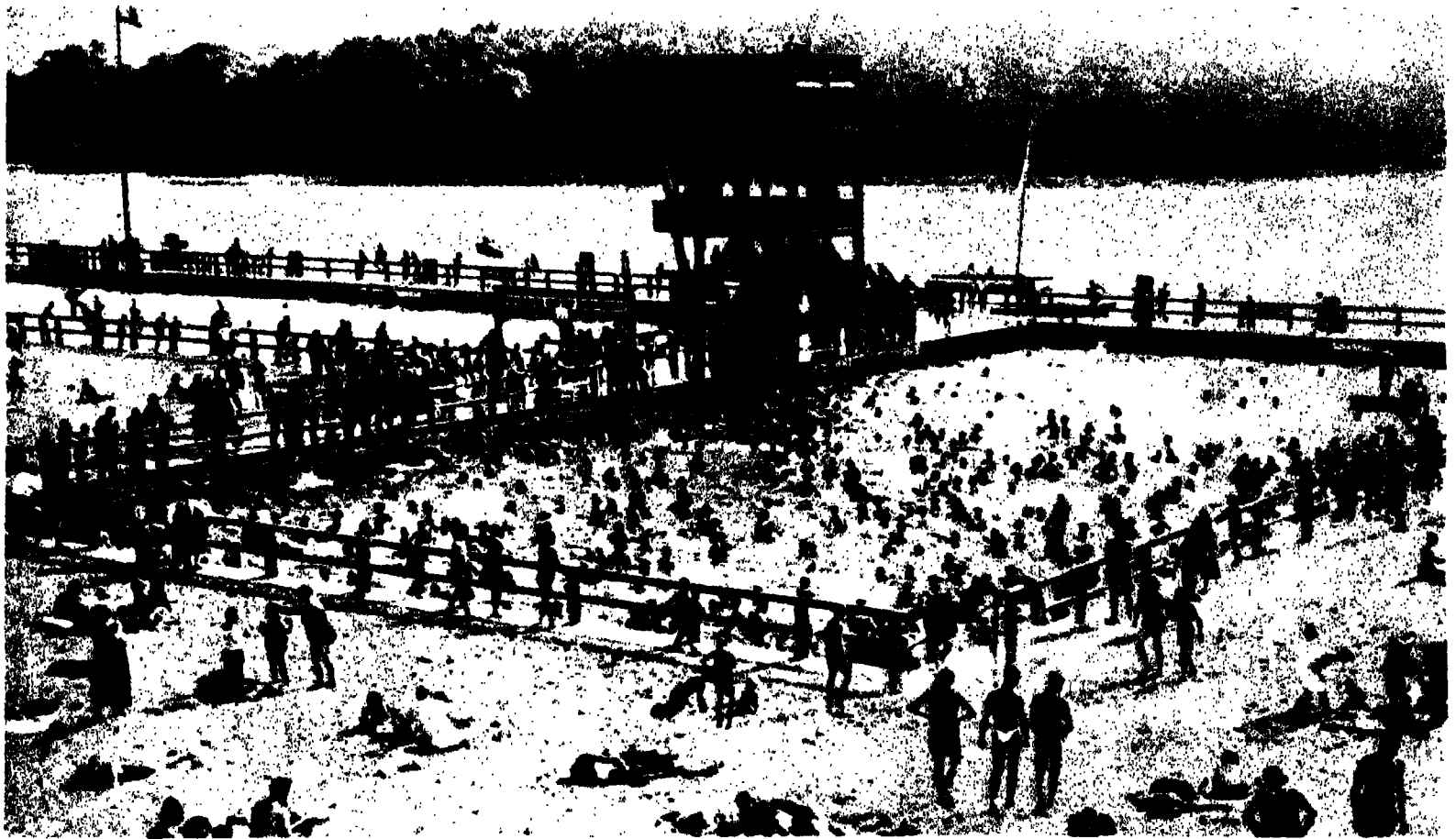
The centre court at Wimbledon is the most famous sports arena in the modern world, and is an eloquent testimony to the rise in popularity of this summer game. The "pat-ball" style has been left far behind, and to-day players from all nations meet in one of the most strenuous of all games. It is one of the few games which men and women can play together.



Wide World

IN FULL SAIL OFF COWES

Although yachting may be a rich man's sport, who has not stood in admiration at the beauty of yachts in full sail off our island coast, or been thrilled at the becalming of a leading boat and wondered whether a friendly breeze would set it in motion again in time to maintain her lead to the winning post? Speed-boat racing has become increasingly popular.



Wide World

MAN'S RETURN TO NATURE

Sun-bathing has increased enormously, and is having a very beneficial effect upon the health of the people. Bathing pools, such as this one in Germany, are being built in most cities and many seaside resorts, thus combining facilities for the health-giving rays of the sun and the best of all exercises—swimming. Diving boards are provided for the expert performers

MANKIND AT PLAY



Wide World

THE START OF A DIRT TRACK RACE

The roar of an engine stirs the pulse of every motoring enthusiast. On the Brooklands track thousands of spectators watch the latest type of racing cars hurtling along the track at enormous speeds. Dirt-track racing, confined to motor-cycles, has many of these thrills, and draws considerable crowds at the various league matches which are held in most cities.



Sport and General

THE SPORT OF KINGS

"They're off!"—what magic words, that thrill the hearts of millions of people every year—many of whom never bet upon a race! Ascot, Sandown, Epsom, or Aintree, each portrays a complete panorama of life—the good and the bad, the bright and the dull, the successes and tragedies of human life. Here we see a typical scene on Epsom Downs on Derby Day.

WHAT MAN HAS LEFT BEHIND

IN some of the environments shown in the previous sections man has existed since the dawn of history. But as he wrote no books he has left us no written records of his presence. It is only through the labours of the archæologist, in very recent times, that we know anything about him.

The modern field worker in archæology depends on many specialists at home to help him. From the study of books and museum specimens, and often from their own earlier field work, they translate ancient writings for him and tell him the time and place where beads, tools, ornaments, pottery, and weapons were probably made. From one or two bone fragments can be built up a picture of the type of man or animal to which they belonged. Quite recently scientists have learnt how to tell from pollen grains found in peat what sort of trees grew at the time the peat was formed and how the human implements and utensils often found lying in the peat were made.

Difficulties to be Encountered

As more and more finds are made and marked on maps, it becomes easy to suggest likely spots to yield new treasures. Strangely enough the aeroplane has been pressed into the service, for an air photograph may show by shadows or lighter streaks where old mounds or circles or ditches once existed. But the field worker himself needs to know a great deal about the past history of the rocks and rivers in the place where he means to work and to have an "eye" for the best trial spot. He must understand the nature of the different soils, and be a bit of an engineer and an architect so as to recognise the plan of a buried building and not ruin it by his digging. He must manage the men who work for him—often they are of different race and speech. Chemistry helps him to know how to treat bones quickly as the air reaches them, for often they crumble at the first breath of exposure. And he must have infinite patience in working over the soil and in detaching soil from bones and other finds, often with delicate instruments, such as dentists use. Above all, his eye must be quick to spot a valuable bead or bit of bone or encrusted metal through the mud and dust.

At each stage photographs and plans and drawings must be made and all finds numbered and labelled and arranged in an orderly way so

that it is easy to tell from what layer they came and therefore of what age they are. Governments now know how much harm ignorant and careless digging can do and in many countries the law prevents men from digging unless they are experts or have the help of experts to guide them.

The Treasures of Troy and Crete

One of the most famous field workers of the last century, who began life as a grocer's boy, wanted to find the ancient city of Troy, about which the Greek poet Homer had sung. He succeeded and found the richest treasure of gold, silver, bronze, fine stone and ivory objects ever known. But this treasure was not, as he thought, in Homer's Troy. It belonged to a far earlier city on the site, for not once, but several times, had a city been built on the ruins of an older one, and his digging just went through the layers without noticing, for finer methods came later. But his example set others working and from that day to this groups of workers have been examining sites round the Mediterranean Sea and in Egypt, and showing how rich and ancient was life in these lands.

It has been proved, chiefly through the work of Sir Arthur Evans, that long before Greece arose, the island of Crete had been the centre of a sea power, one of whose kings was named Minos which led to the later legend of the Minotaur. On the island remains of a great and beautiful palace, and objects of gold and bronze, gems, pottery and sculpture have also been discovered, together with mysterious ancient writings.

Eggs of the Dinosaur

Scientists had reason to think that Central Asia was possibly a place from which early forms of reptiles and mammals (animals who feed their young at the breast) might have spread. The American Museum of Natural History sent out an expedition in 1921 which has worked for years and has proved that the guess was correct. Eggs of the dinosaur, an ancient form of reptile, long extinct, were found in clutches in Mongolia, preserved in that dry and remote place just as the female had left them long ages ago. Tools of very ancient man were also found in this region.

Other explorer archæologists, Sir Aurel Stein and Sven Hedin, found buried under the wind-borne sands of what is now a desert in Central Asia, traces of a trade route by which silk came

WHAT MAN HAS LEFT BEHIND

from China to the west, and along which Greek influences reached the east. Later the Buddhist religion came to China along the eastern part of of this route. But political troubles have since prevented these explorers and the Americans from continuing their tasks, so all the past history of the region cannot at the present be worked out.

The Earliest Remains of Man

In 1929 China astonished the world by the discovery near Peking of a human skull so old that its owner must have belonged to the "dawn" days before man as we now know him existed. More astonishing still it was found that this ancient half human creature knew the use of fire and made tools. Other "dawn" men had been found, in Java in 1891, in England in 1912, and in Rhodesia in 1922. Where did this type of man, so widely scattered, first arise? That is a problem for archæologists to solve.

A later, but still rather ape-like man, first found at Neanderthal, had been known from finds in Europe. Now an Englishwoman has found several skulls of this type in Palestine, in caves which she and her party are still examining.

East Africa, near the Great Rift Valley, has provided evidence, both from skulls and from tools, that very early man of the "modern" type, that is neither "dawn" nor "Neanderthal," yet ages old, lived and worked there at least as long ago, if not earlier than, the same type of man in western Europe. In Africa, too, rock paintings and engravings, very much like those of Old Stone Age man in Spanish caves, have come to light. Will the home of the earliest "dawn" men prove to have been in Africa or Asia?

Other work in Palestine interests students of the Bible; much is being learnt about the site of Jericho and about its walls and what happened to them. What the city looked like in the late Bronze Age, when the Israelites probably entered Canaan three thousand years ago, is now known. Ur "of the Chaldees," which Abraham visited, has been and is being explored by Dr. C. L. Woolley. It lay near the delta of the Tigris and Euphrates and Genesis, Chapter I, verses 9-12, suggests what happened as the delta silted up and become dry land. Graves of kings and commoners who lived some five and a half thousand years ago have been opened. The poorer folk were buried with a pottery, stone or copper drinking vessel in their

hands; the kings with objects of gold and silver, and precious stones. These people knew how to build arches and probably the Greeks and Romans borrowed this from them, as the Babylonians and Assyrians borrowed their laws and religions.

And now it is known from finds that in the Indus valley in north-east India a people dwelt about 5,000 years ago who worked and lived in much the same sort of way as the early folk of Ur and Mesopotamia. They made bricks and pottery and seals and tools and weapons of very similar design and material, with the same sort of patterns.

In Persia the Americans were examining Persepolis, the ruined capital, and found remains of beautifully carved and decorated palaces dating back to such famous leaders as Cyrus and Darius and Xerxes. But archæologists were more excited because quite close to this magnificent city were dug up the ruins of an old and humble New Stone Age village. Mud huts, with red ochre paintings on the walls and with fireplaces and burnt clay firedogs stood in a little narrow street. And in the huts were pottery dishes containing the remains of food. Flint knives lay in some of the dishes just as the folk who used them had left them over six thousand years ago.

A Civilisation Discovered in American Forests

No remains of very ancient men are known from America. But in Central America ruins left by the Early Maya people nearly 2,000 years ago are being excavated. The forest had grown over them, and they had long lain hidden. These Mayas were clever at carving and raising huge stones, at building temples on pyramids, at weaving, at making pottery and at cultivating maize. They had a sort of writing and they had a marvellous system of working out the calendar year. Yet they had only stone tools and did not know how to make arches or wheels—not even a cart wheel, much less a potter's wheel.

In our own island work is being carried out on Roman sites, on old hill forts and in caves. The making of a bypass road led to the discovery of a damp insanitary village over the ruins of which gravel had been spread, upon which a new and drier and healthier village had arisen—in fact, an example of prehistoric British "slum-clearance."

R. M. FLEMING.



E.N.A.

THE SERPENT STAIRS OF LONG AGO

The origin of these barbaric sculptures is buried in the dim shadows of the remote past. They were built for the Temple of Quetzalcoatl at San Juan Teotihuacan, Mexico, thousands of years before the birth of Christ. Two distinct races came and conquered and again vanished into oblivion before the coming of Maya Indians. The builders must have been highly civilised, for the Teotihuacan pyramids, like those of Egypt, were constructed by very careful astronomical calculations.

WHAT MAN HAS LEFT BEHIND



E.N.A.

(Left)

A CARVED MONOLITH

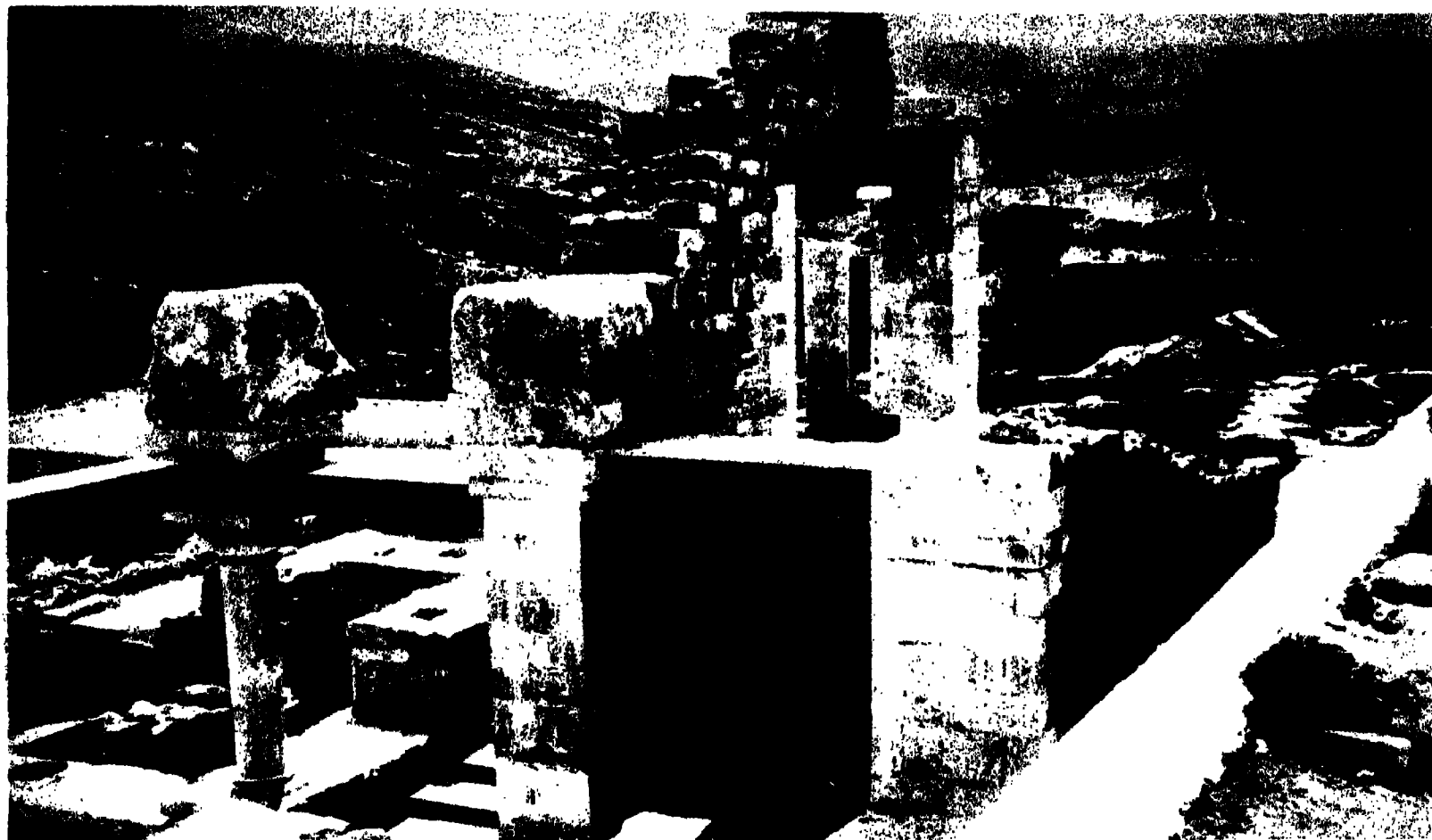
One of the many elaborately carved stone monoliths which have come down from the highly civilised Maya races which peopled Guatemala in the past. Monoliths resembling these have also been found in Egypt and India.



F.N.A.

THE LEANING STELA

On this leaning stela in Guatemala is carved in calendar form the past history of Central American culture, and from it approximate dates can be estimated. It is widely believed that this form of chronology extended as far back as the sixth century B.C.



E.N.A.

KNOSSOS—A RELIC OF THE KINGS OF CRETE

Far back in the Bronze Age, at least two thousand years B.C., Crete was one of the mighty civilisations of the Mediterranean Sea, with a line of kings of her own. Thanks to the most skilful and inspired archaeological excavations of Sir Arthur Evans, striking facts have come to light regarding the highly artistic civilisation that these pre-history Cretans enjoyed.

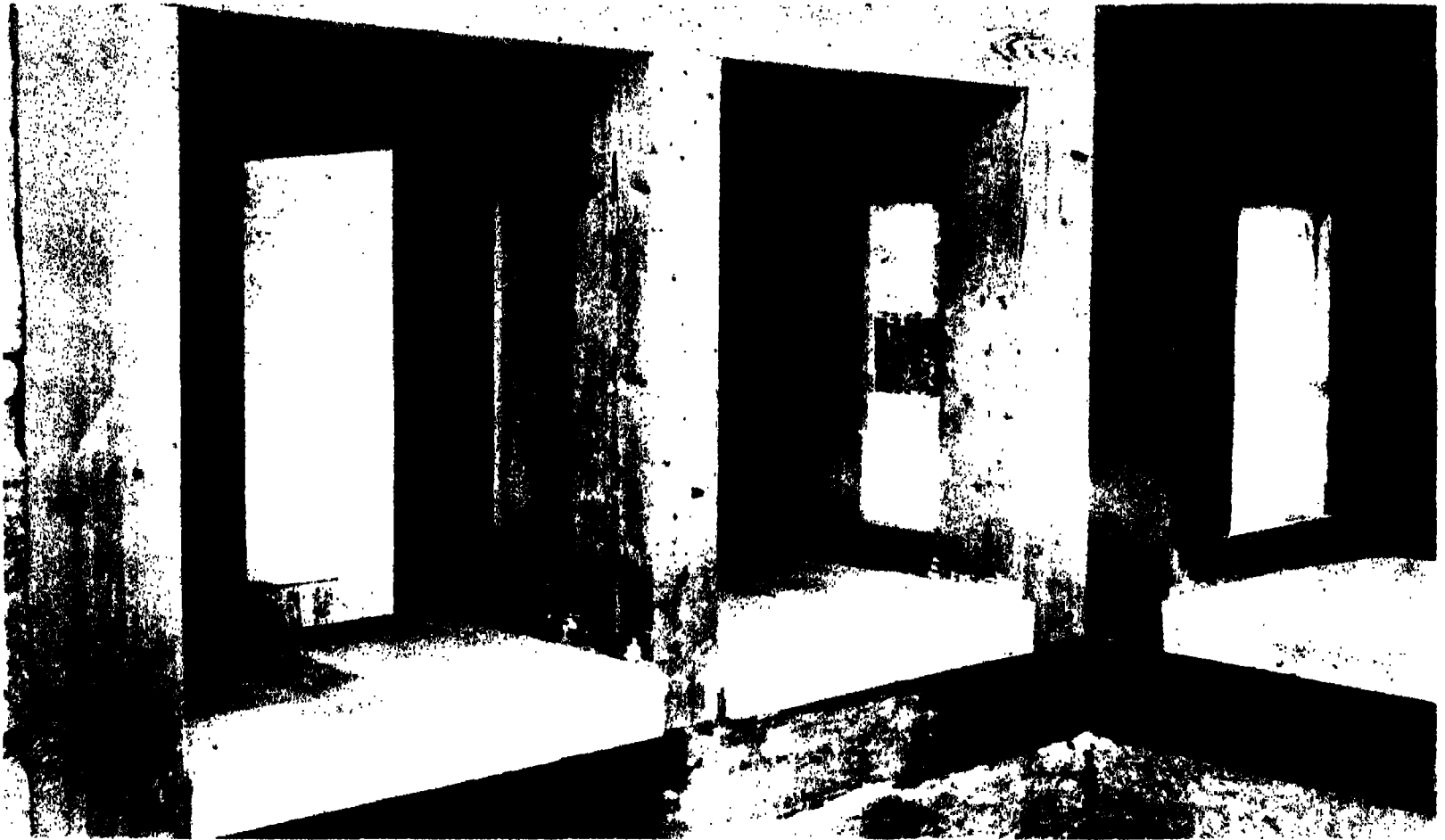


E.N.A.

A PALACE IN RUINS

Knossos, the site of the palace shown in the two pictures on this page, was founded by Minos, King of Crete. The locality was supposed to be the scene of the birth of Jupiter and of his marriage with Hera. Excavations of the palace have revealed, among many other things, a most modern system of drainage, fresco paintings, and clay documents in an unknown language.

WHAT MAN HAS LEFT BEHIND



E.N.A.

A ROYAL NURSERY IN ANCIENT CRETE

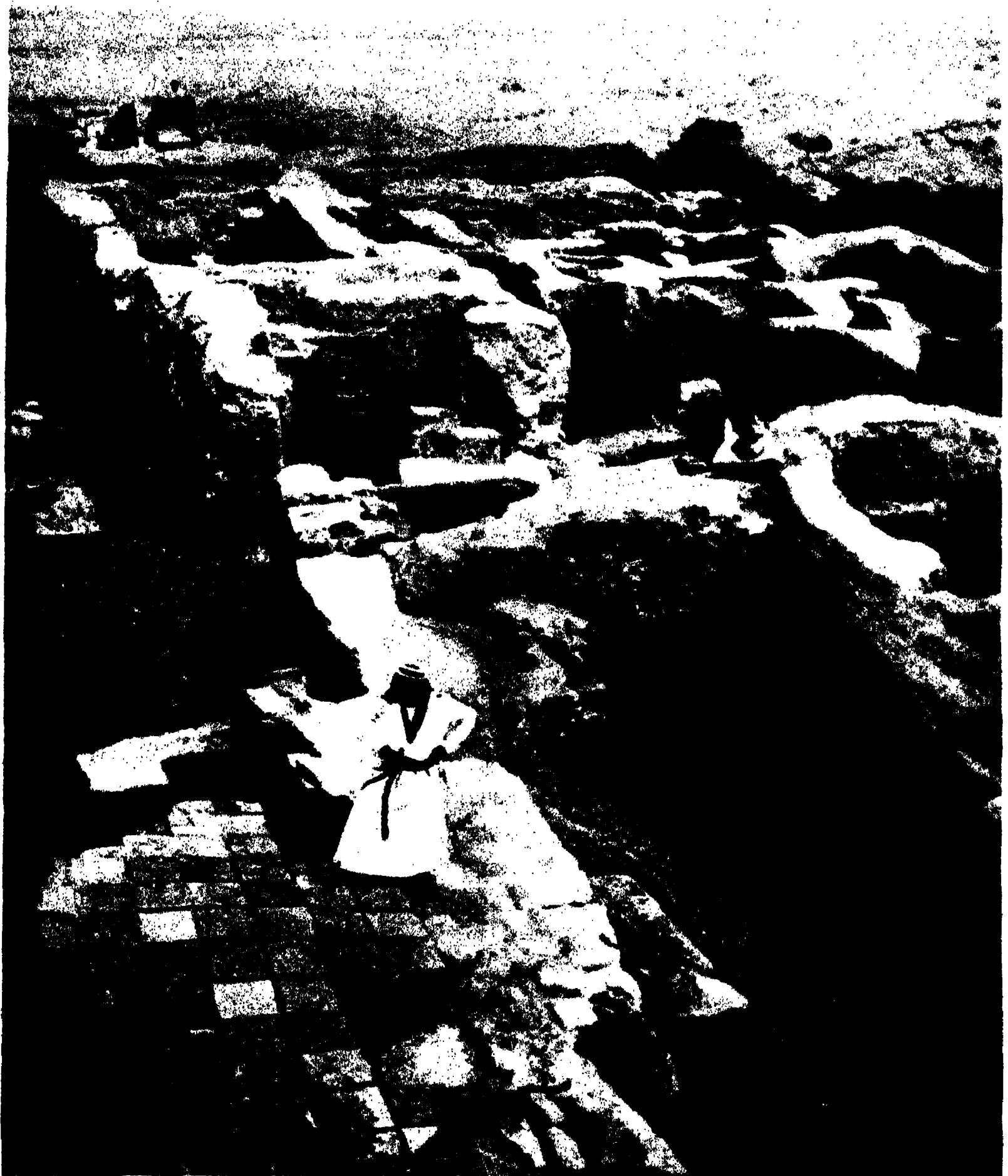
Attached to the throne room was a bathroom fitted in the most modern style. The decorated walls tell stories of bull fights and show a procession of life-sized women with tight-belted waists and flounced skirts. The children were cared for by royal nurses and had special apartments (which are shown in the picture above) set aside as nurseries.



E.N.A.

ROWS OF CRETAN POTTERY

Much of the Cretan household pottery was rough, unpainted ware, but the painted vases are among some of the most beautiful that man has ever produced, and are clear evidence of a high state of civilisation. The clay was worked to egg-shell fineness by hand, and it was not until the potter's wheel was introduced that the high standard was eventually lowered.



E.N.A.

RUINS IN "THE GARDEN OF EDEN"

The alluvial plain of Babylonia was called Edin, the supposed Garden of Eden of the Book of Genesis. Since, however, excavations have failed to reveal flint weapons or other remains of the Stone Ages, it is doubtful whether this strip of country between the rivers Tigris and Euphrates was ever inhabited by men unacquainted with the art of metals. Thus the site of man's first home has yet to be revealed. Here we see the ruins of a city of Babylon, built probably 5,000 years ago.

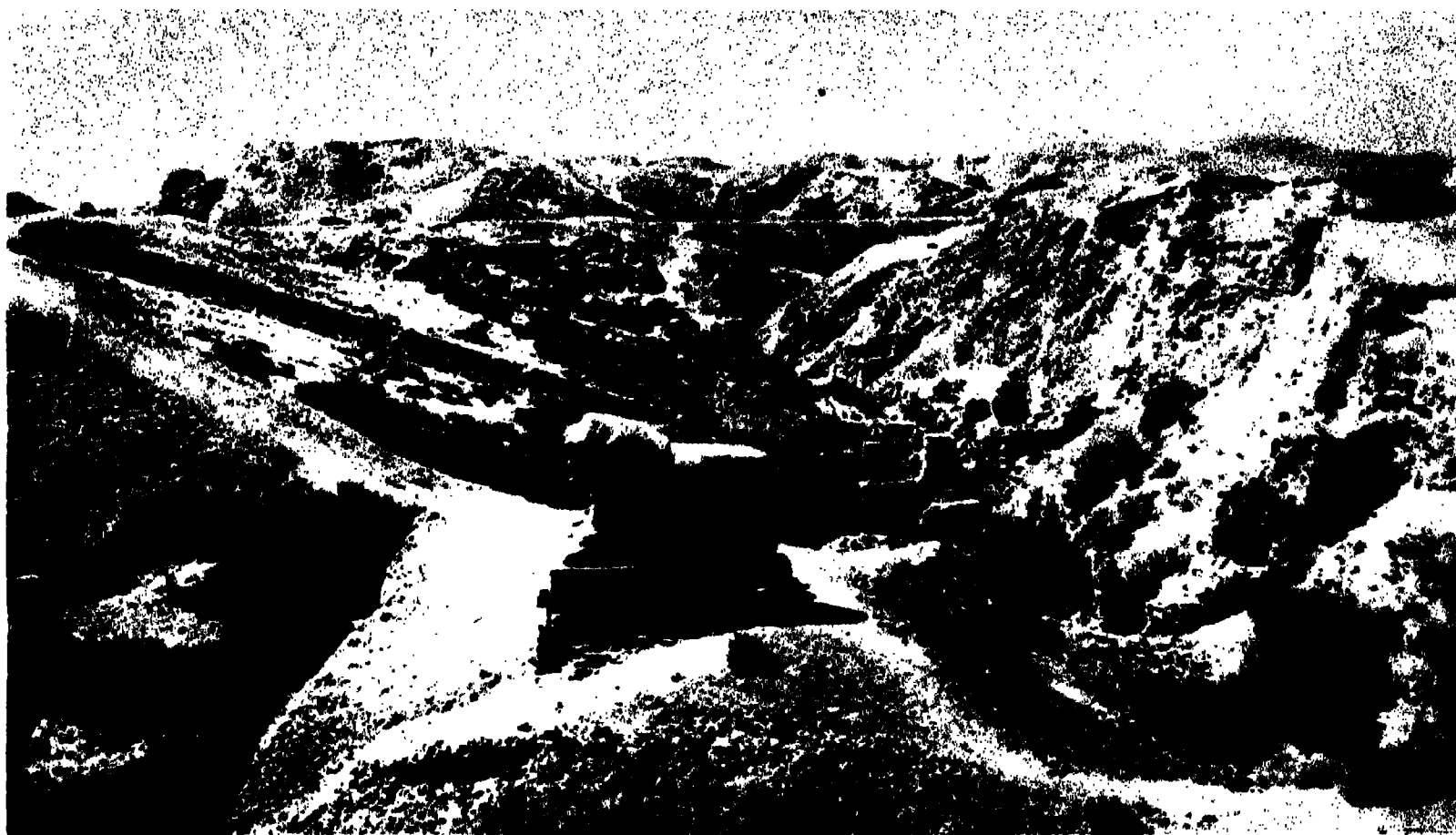
WHAT MAN HAS LEFT BEHIND



E.N.A.

THE TEMPLE OF THE MOON GOD AT UR

Here we see an aerial view of the Ziggurat, or temple dedicated to the Moon God, which dates back 3,000 years before Christ. It was built at Ur of the Chaldees, a place which Abraham visited. Graves which have been discovered show that the tombs contain not only the bodies of the departed, but all kinds of articles, such as drinking vessels and valuables which, it was thought, might be useful in the next world. This is conclusive evidence that these people believed in a future life.



E.N.A.

THE WORLD'S MOST REMARKABLE MONUMENT

The Lion of Babylon is a huge stone carving of the King of Beasts standing over a prostrate man. Although it has been suggested that this pre-historic monument may refer to the incident of Daniel, it is more probable that the statue has a symbolic rather than an historical significance, representing the supremacy of the wild, since the lion freely roamed over Asia.

WHAT MAN HAS LEFT BEHIND



E.N.A.

AN OLD TESTAMENT CITY

Jerash, or Gerasa, probably represents the Ramoth Gilead of the Old Testament, although nothing definite has been discovered to allow of a more accurate description. It was certainly rebuilt by the Romans in about A.D. 65, but was later burned and left desolate. Excavators have found there the remains of a beautiful sun temple, fine roads, and a theatre.

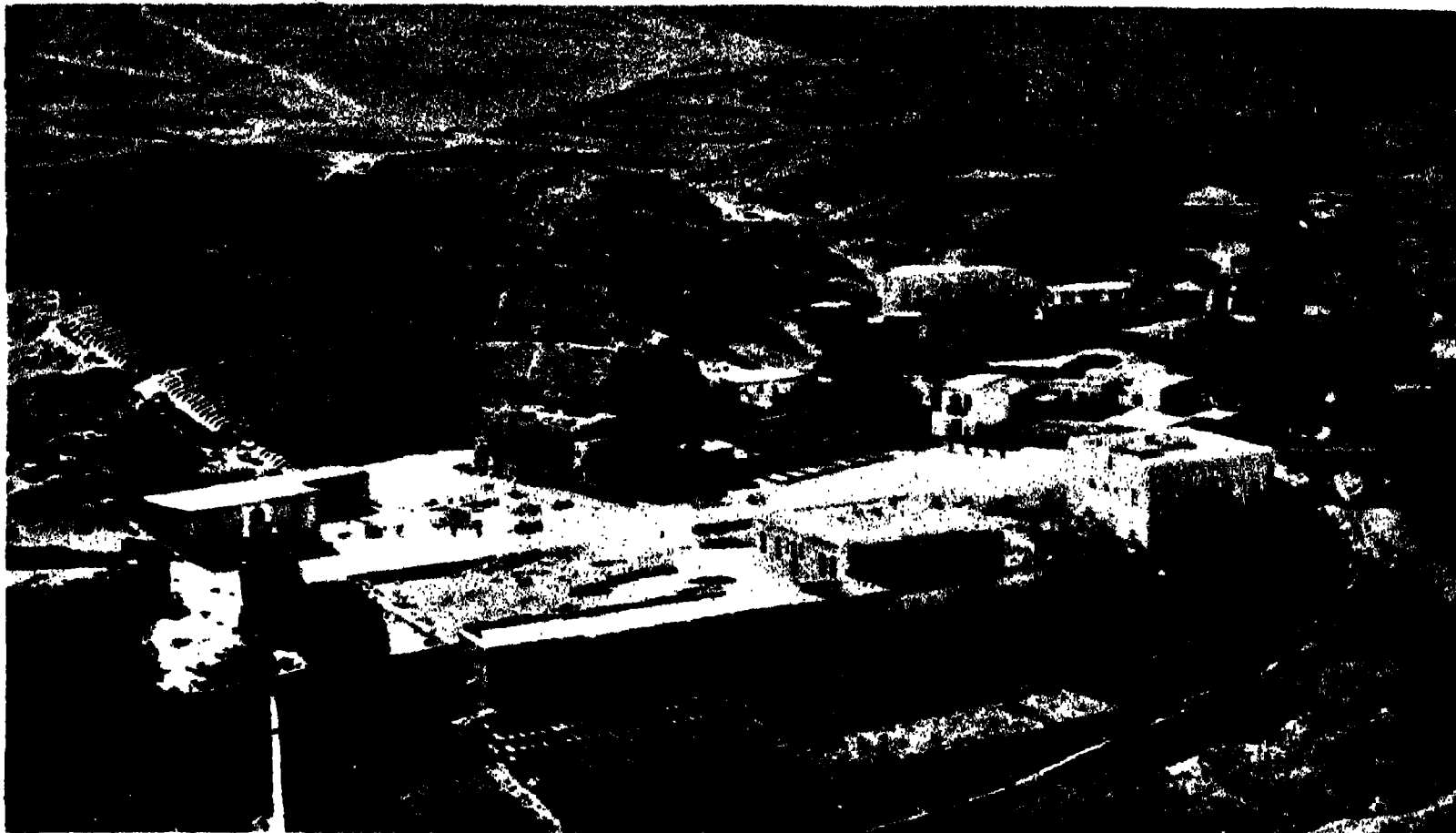


E.N.A.

REBURYING AHAB'S PALACE IN SAMARIA

The enormous quantity of earth removed by the American excavators in clearing these ruins was conveyed in baskets on the heads of women, who, like ants, formed an endless chain of toil, running back and forth. Once the archaeological researches had been made, the ruins were again filled with the dust of remote ages, thus preserving them for all time.

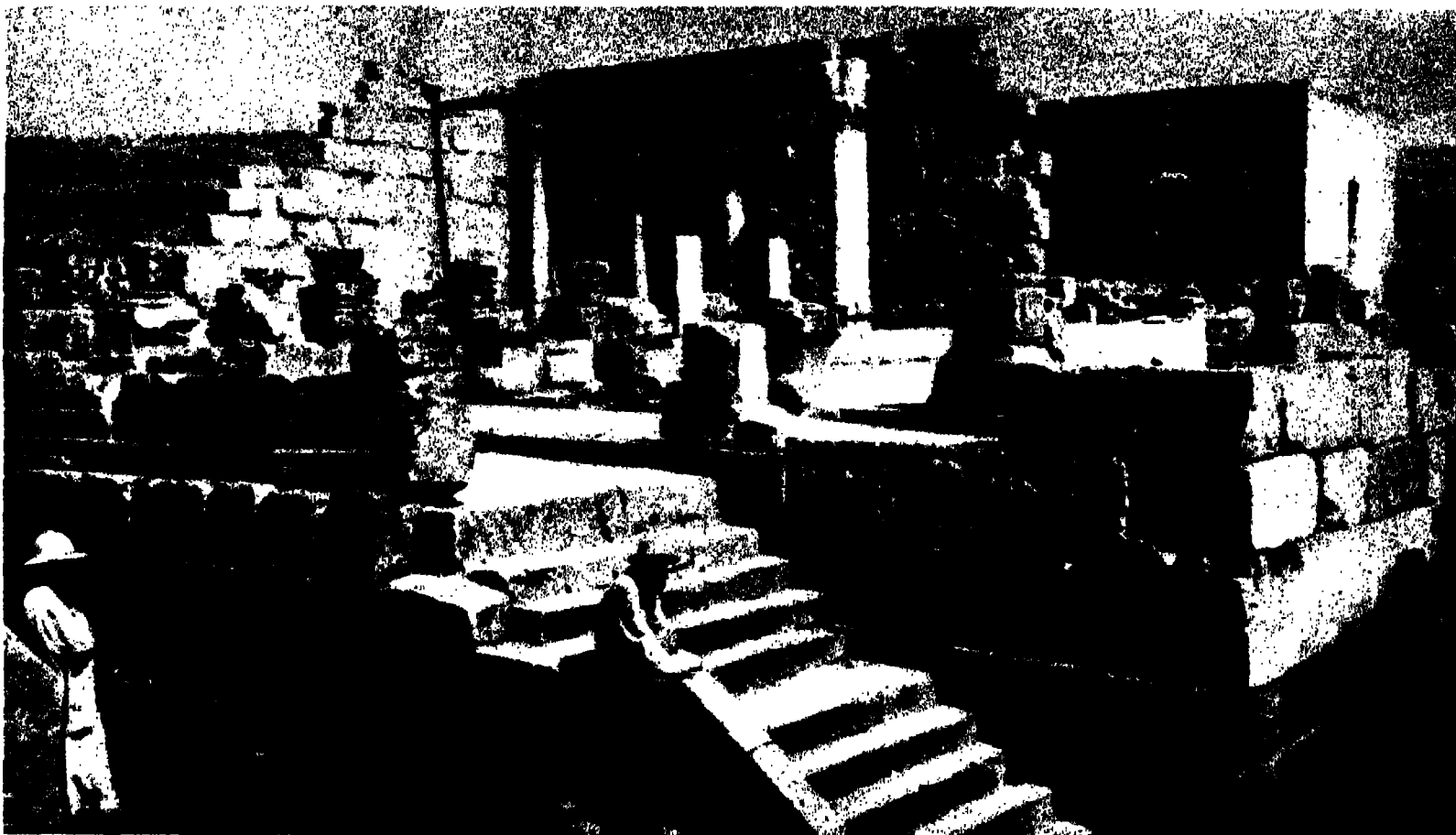
WHAT MAN HAS LEFT BEHIND



E.N.A.

A THEATRE OPEN TO THE SKY

The power of the Roman Empire extended throughout the known world until her decline in the fifth century of the Christian era. Palestine was no exception to the rule, and these excavations at Amman, show the remains of an enormous outdoor theatre built in stone on a hillside. These theatres have been found to possess remarkable acoustic properties.



E.N.A.

A SYNAGOGUE IN WHICH CHRIST PREACHED

Covered with debris for many centuries, recent excavations have unearthed the remains of this synagogue at Capernaum on the shores of the Sea of Galilee. It was here that Christ called Andrew, Matthew (or Levi) and Peter, and in its streets He performed many of His miracles. In the synagogue, in which were kept the Books of the Law, Christ often preached.

WHAT MAN HAS LEFT BEHIND



E.N.A.

A REALISTIC PICTURE IN STONE

This is one of the gigantic rock-carvings recently brought to light in the neighbourhood of the Graves of the Kings at Nagsh-I-Rustam, near Persepolis. It is supposed to show the Emperor Valerian kneeling before King Sapor, son of Artaxerxes. The stones of the colossal buildings which have been found in this ancient city of Persia were laid without mortar.

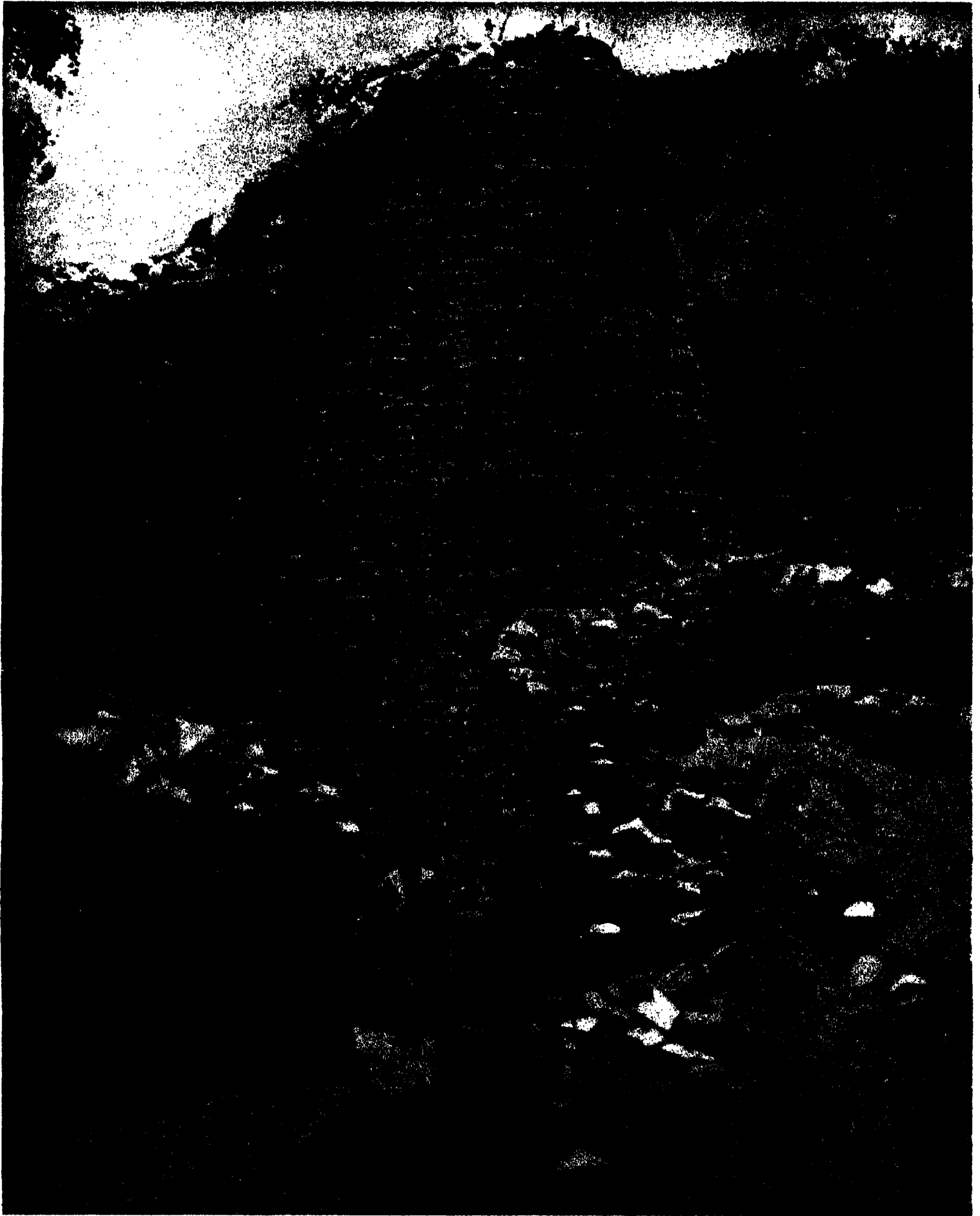


E.N.A.

WONDERFUL DISCOVERIES IN SPAIN

To-day Merida, in Spain, is a small, although important, railway junction, but in 25 B.C., when it was founded as Augusta Emerita, it was one of the most splendid cities, and was large enough to contain a garrison of 90,000 men. There are a few remnants of Roman temples, roads, and a large amphitheatre, but the massive theatre is in good preservation.

WHAT MAN HAS LEFT BEHIND



E.N.A.

A THIRTY-FOOT TOWER AT ZIMBABWE

These ruins at Zimbabwe in Rhodesia were discovered in 1868, and it was at first believed that they were the remains of an ancient oriental civilisation. But a close study of them has shown that they were built not earlier than the fourteenth or fifteenth century A.D., and that instead of being ancient temples they are, in reality, Bantu stone kraals. It is thus, as these pages have shown, that excavations provide authenticated facts upon which historians of the world's history may safely build.

EXPLORING THE UNKNOWN

IT is popularly supposed that the age of great exploration has now passed. This is true so far as sensational journeys are concerned, with the exception of the Polar regions. Many considerable areas of the earth's surface, however, are still untraversed by Europeans, or are known only from the brief reports of pioneer explorers. In the Polar regions there are still vast expanses of land and sea unexplored. Several journeys have been made across the great ice-cap of Greenland from either coast, but no one has yet attempted the hazardous journey from north to south throughout the length of the great island. In the North Polar Ocean, between Alaska and Siberia, there lies a large area, probably permanently frozen, around what is known as the "Pole of Inaccessibility," which has never been crossed by man. It can, perhaps, only be explored by an airship, which might work in conjunction with sledging parties. During recent years the Russians, by means of ice-breakers and aeroplanes, have done much work in the seas north of Siberia. They have mapped accurately the group of islands known as *Sernyaya Zemlya*, or North Land, which was only discovered in 1913.

The main outline of the Antarctic Continent is now known, and explorers are concentrating upon the character of the interior. The continent may consist of two large land masses separated by a frozen strait running from the Ross Sea to the Weddell Sea, and it is to clear up this point, that two American expeditions, commanded by Admiral Byrd and Mr. Lincoln Ellsworth, set out in 1933. Both expeditions are equipped with aeroplanes for flights up to 3,000 miles. Two other recent explorers who have used aeroplanes are Sir Hubert Wilkins, who made important discoveries from the air in Graham Land, and Sir Douglas Mawson, the leader of a British-Australian expedition which charted the coast of Enderby and Kemp Lands. Much interesting work has also been achieved by intrepid Norwegian whalers.

The Uncharted Asian Mountains and the Untrodden Deserts

Of the other continents, Asia, perhaps, still offers the best field for explorers. A few years ago a Russian scientist discovered a hitherto unknown range of mountains in north-east Siberia. It is, however, areas around the heart of the continent

which remain largely unexplored. Though the frontier zone between China and Tibet has been crossed at several points, untraversed areas are still to be found, especially in the south-east, and towards the Assam-Burma frontier. It is into this region that Major Kingdom Ward made his way last year. Quite recently a great mountain in Western China, over 25,000 feet high, has been photographed and climbed for the first time. Many of the valleys of the Himalaya and Karakoram ranges still await explorers: the recent Mount Everest expeditions, though primarily organised to climb that mountain, have added greatly to our knowledge of Southern Tibet. There are also stretches of the mighty Brahmaputra river yet to be visited. Further west, in Afghanistan, much remains to be done, particularly in the east, and in the very interesting district of Kafiristan. In Arabia, the great interior southern desert is still little known, though the recent journeys of Bertram Thomas and H. St. J. Philby have already established its main characteristics.

The Blank Areas of the Sahara

After Asia, Africa presents several fields for exploration. The work of British, French and Italian explorers in the last few years has covered the greater part of the Sahara desert, though along the centre of the southern borderland with the Sudan there are "blank" areas, for example, around the highlands of Tibesti. British efforts have largely been directed to seeking for a reported oasis, called Zerzura, which tradition places in the Libyan desert, south-west of Khartoum. Major Bagnold, who has led two expeditions in this area, has perfected a technique for travelling by car across the sandy wastes and dunes which defeated previous explorers. Just after the war, Mrs. Rosita Forbes was the first European since 1874 to visit the oasis of Kufra, further north. The work of officials of the Egyptian services has shown that a great hollow—the Qattara depression, many hundreds of feet below sea level—exists near the Mediterranean—and it is proposed to connect this by tunnels with the sea, to develop hydro-electric power. On the Atlantic coast of Northern Africa, the Spanish territory of Rio de Oro and the neighbouring portions of the French sphere have scarcely been examined. In 1928, a young

EXPLORING THE UNKNOWN

Frenchman, Vieuchange, penetrated in disguise to Smara, but he experienced such hardships that he died shortly after his return. On the eastern side of Africa, there are unexplored areas in Danakil (the Protectorate of Eritrea), and in the independent native kingdom of Abyssinia, largely owing to the opposition of the natives to foreign travellers. The greater part of Central Africa has been well traversed, and much of it has been mapped, though no doubt there are isolated areas of varying size in the Congo and Mozambique of which little is known. In the comparatively well-known colony of Northern Rhodesia, several considerable, and previously unmapped, waterfalls have been visited in the last few years. Examples of types of modern African exploration are the expeditions under Mr. E. B. Worthington which have studied the fisheries of the East Central lakes with a view to their possible economic development, and those under Mr. L. S. B. Leakey, which have examined the geology and the remaining traces of early man in Kenya.

Mapping North America by Aeroplane

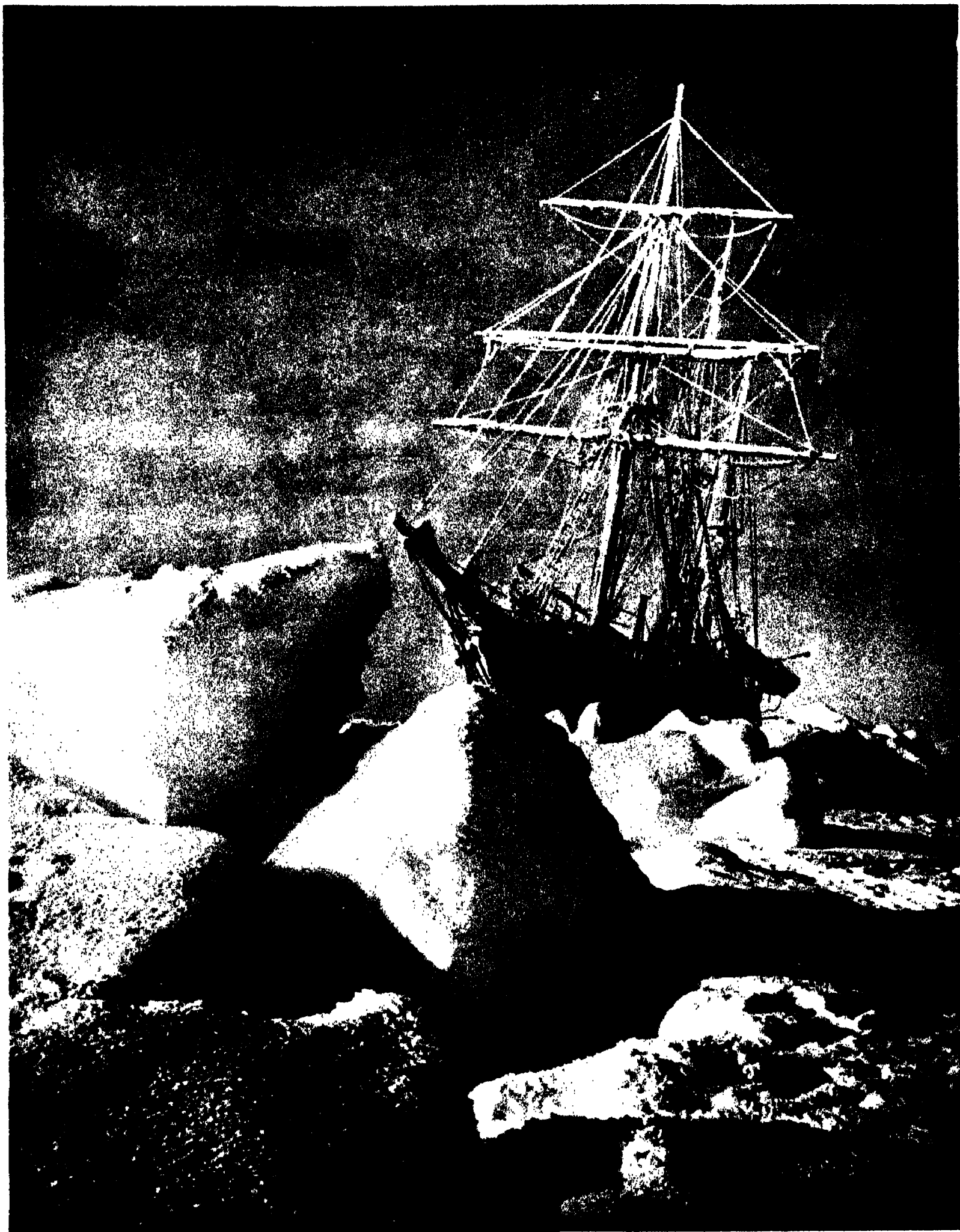
The semi-Arctic portions of North America are steadily being examined, a work in which the aeroplane plays an important part, chiefly by prospectors for minerals. The Arctic islands to the north are being made known by the Royal Canadian Mounted Police, who maintain several posts there. The interior of Labrador has yet to be thoroughly explored and mapped. The Privy Council decided in the dispute between Newfoundland and Canada as to its ownership that the former was entitled to the land from the coast to the watershed. This, however, is not accurately known. For this reason, the late Mr. H. G. Watkins led a small party into the interior in 1928, and was able to disentangle some of its complicated geography. He later led a very successful expedition to Greenland to study the possibilities of an air route to Canada. The dangerous coastal waters of Labrador are now being charted by parties of Admiralty surveyors, for they are of importance in connecting with the shipping route from Port Churchill to Great Britain. The small island of Akpatok was thoroughly examined by a party of the Oxford University Exploration Club as recently as 1931. In Western America, as recent journeys have shown, there are still minor fields for exploration in the Rocky Mountains, which are attracting mountaineers.

The great forested basin of the Amazon, with its innumerable tributaries, comprises the largest area for further exploration in South America. The courses of most of the waterways have been explored, but a good deal of country away from them is still known only to the wandering tribes. The Sierra Parima, west of British Guiana, where the Orinoco and the Rio Branco, a tributary of the Amazon, rise, is not known in its entirety. The expedition of Dr. Hamilton Rice in 1924 greatly extended our knowledge in this quarter. To the south of the main river, there are unknown regions in Matto Grosso. It was while on an expedition to investigate reports of ancient Indian civilisations in this neighbourhood that the British explorer, Colonel Fawcett, disappeared some years ago. The great Cordillera of the Andes are still by no means completely explored. Some valleys, in fact, seem to have dropped out of modern knowledge, as was shown when the Shippee Johnson air expedition to the Andes flew over the inhabited valley of Colca, of which they could learn little in Peru. The southernmost extremities of the Andes and their continuation in Tierra del Fuego, one of the inhospitable regions of the earth, also invite further exploration.

The great central and western desert of Australia has been crossed in several directions, and it is probable that further pioneering expeditions can reveal a few surprises, but intensive examination has yet to be carried out. In search for gold, geologists have recently made a study of the central mountains, the Macdonald Range. The Great Barrier Reef off the coast of Queensland has been thoroughly examined by a scientific expedition interested in the growth of coral and the natural life of the reef. In the great island of New Guinea to the north-east, the extremely difficult mountain range of the interior has yet to be comprehensively explored. A few years ago it was crossed from sea to sea for the first time.

It has been possible in this brief sketch only to indicate briefly the work open to the future explorer. The great change will take place in his methods of work. Adventures will be regarded more and more as evidence of faulty organisation or rash leadership. He will be expected to return with accurate scientific information, and for this purpose he will use increasingly the very latest scientific instruments, as he is employing to-day the photo-theodolite, the motor-car, the aeroplane, the wireless receiving set, and the submarine.

G. R. CRONE, M.A.



Courtesy, Lady Shackleton

MAROONED IN A FAIRYLAND OF SNOW

Marooned amid snow and ice in the Weddell Sea, in 1915, Sir Ernest Shackleton's ship, *The Endurance*, makes a strikingly beautiful scene—yet treacherous, for the ship was crushed in the mighty grip of the ice, but Sir Ernest, after a hazardous and daring voyage in a whaling boat, reached South Georgia, where he was able to secure help for his marooned crew.

EXPLORING THE UNKNOWN



E.N.A.

AMID THE MAJESTIC PEAKS OF THE HIMALAYAS

India's mighty Himalayan Mountains attract explorers from all parts of the world and various expeditions have furnished valuable information concerning the many types of plants, rocks and animals. So vast is the region, however, that in 1926 Major Mason explored a valley in the Karakoram Himalayas, which only one European had previously visited.

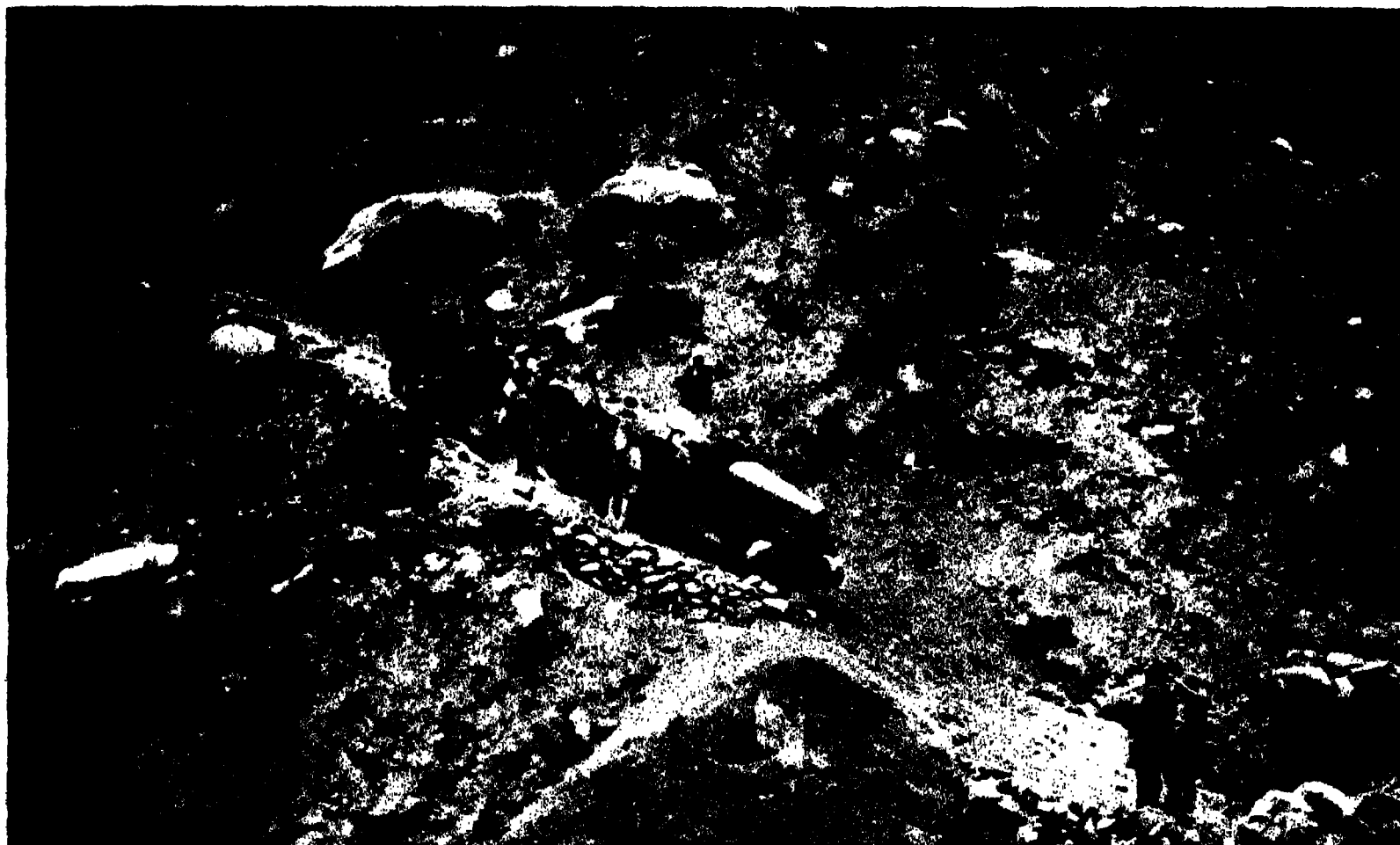


Courtesy, Mt. Everest Committee

UNCONQUERED EVEREST

Mount Everest, the mightiest of the Himalayan giants, continually lures the explorer. In 1933 another attempt was made to scale its 29,141 feet, and success was almost in the explorers' grasp when the monsoon forced the climbers back when 900 feet from the summit. The picture shows native porters carrying equipment and stores with the aid of a rope ladder.

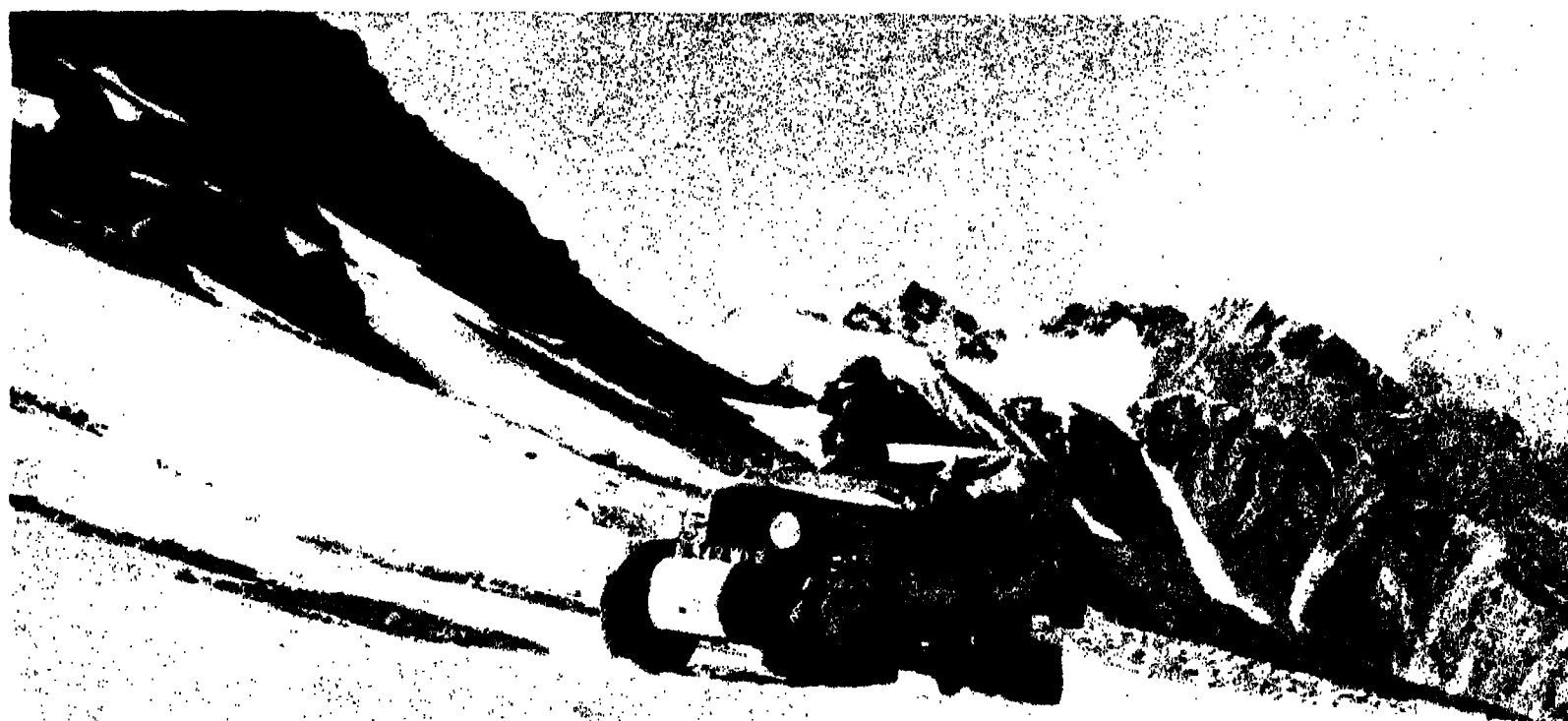
EXPLORING THE UNKNOWN



Courtesy, Citroën Trans-Asiatic Expedition

THE CAR COMES TO THE AID OF THE EXPLORER

The car, apart from enabling the explorer to cover much greater distances, is valuable in rendering him independent of the assistance of natives, who are too often apt to desert when things go wrong and their help is most needed. This car, with its caterpillar wheels, can traverse rocky Asian tracks where man would find it well-nigh impossible to find a foothold.



Courtesy, Citroën Trans-Asiatic Expedition

THE MECHANICAL HERO OF THE EXPEDITION

The car seems equally at home on snowy slopes as on the stony track of the picture above. Here the expedition has paused to survey the snow-covered mountains surrounding the pass. The main object of such expeditions is the mapping of the land with a view to improving existing methods of transport and communication. Much valuable information is obtained.



E.N.A.

THE "CAR" OF THE DESERT

The camel is, as yet, the most satisfactory means of desert transport, though how long it will retain its supremacy in face of the challenge of the car remains to be seen. This explorer's camel caravan is crossing the Gobi Desert of Mongolia—one of the cool deserts of the world. It was in this desert that eggs of the prehistoric dinosaur were recently discovered.



E.N.A.

THE CAMEL TAKES TO THE WATER

Here we see an explorer's camels being ferried across a wide river in the Gobi Desert. This ferry boat is a very primitive affair, consisting simply of a raft stretched across five roughly hewn canoes. The presence of such a wide stretch of water would appear to suggest that irrigation schemes might convert areas near it into land that could be suitably cultivated.

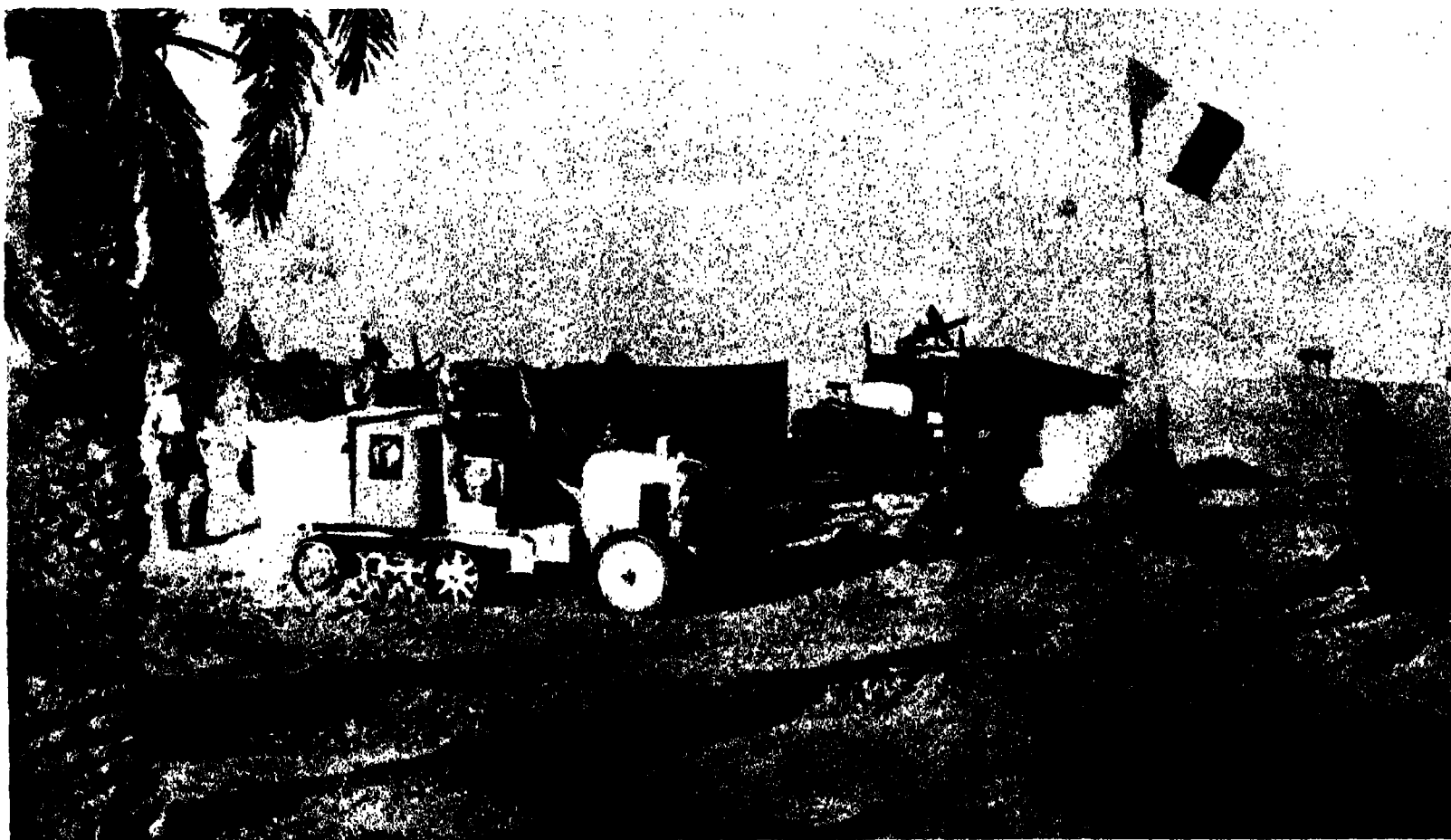
EXPLORING THE UNKNOWN



A DESERT RICH IN FOSSILS

Two members of a scientific expedition amongst a sea of arid rocks in the Gobi Desert. The man on the right is preparing a map of the district. This desert is particularly rich in fossil remains, and is a fascinating field of study for the investigation of the history that is buried in the rocks. The Desert of Gobi stretches across Asia for 1,500 miles to the borders of Manchuria. Although the first explorer, Marco Polo, travelled across it nearly 700 years ago, our knowledge of it as a whole is still very imperfect.

E.N.A.



E.N.A.

PITCHING CAMP IN THE SAHARA

A party of explorers take a rest at an oasis on their 2,000 mile journey across the Sahara Desert to Timbuktu. Here the car has won its challenge to the camel, for these motor tractors accomplished this tedious journey across waterless and partly unknown country in three weeks, whereas the camel caravan needs at least six months for the same journey.

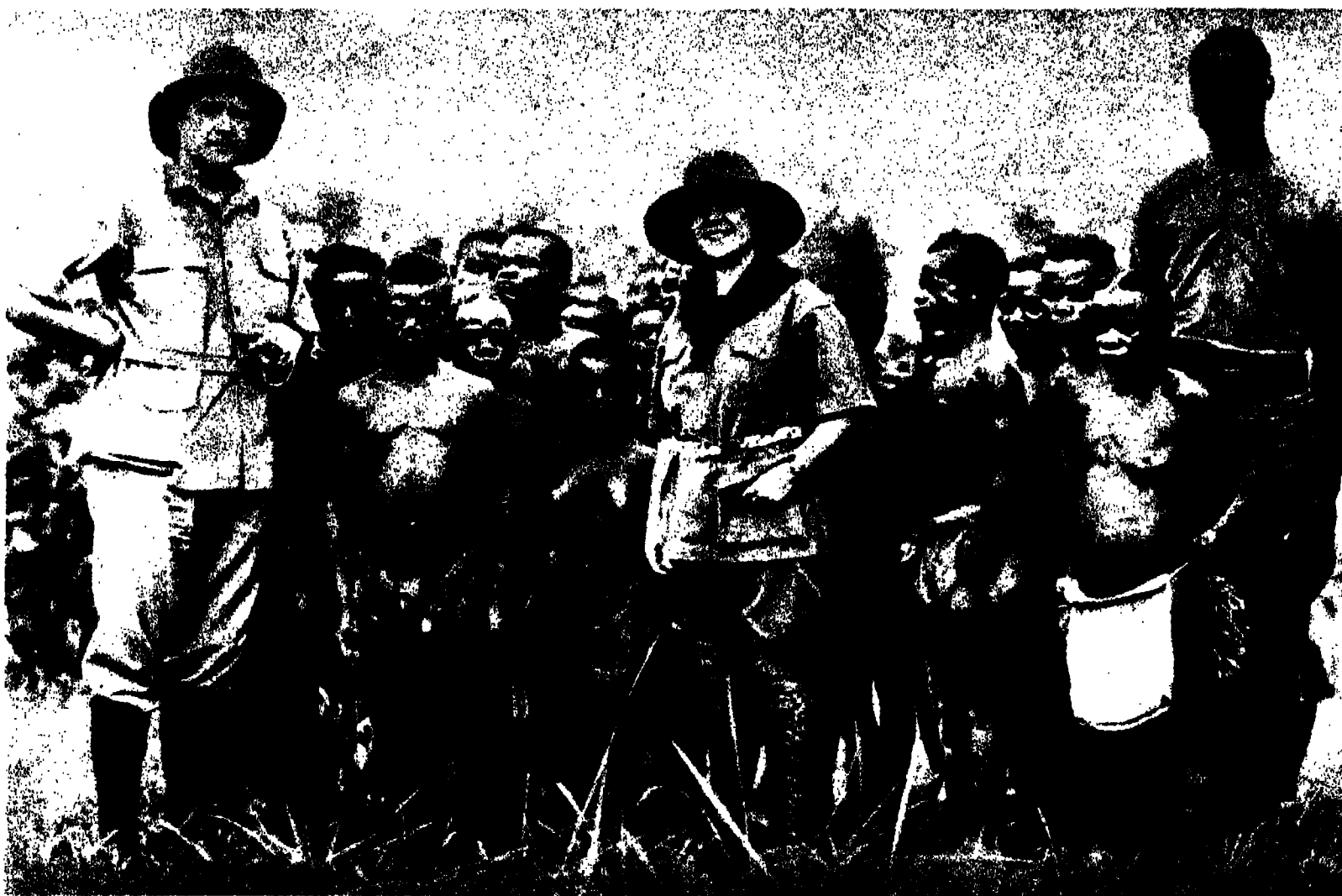
EXPLORING THE UNKNOWN



E.N.A.

NATIVE PORTERS CARRYING STORES ACROSS A RIVER

These native porters, attached to an exploring party, are crossing a wide but very shallow river in Mozambique in East Africa. In districts such as this, where all types of country have to be crossed, the explorer must perforce rely on the natives for the transport of his stores. Where they can be relied upon they are valuable for their knowledge of conditions.



E.N.A.

AMONG THE PIGMIES

These little dark folk live in Central Africa in the Belgian Congo. They are here seen with an American explorer and his wife, and on the right is a native of normal height. The pigmies are a sturdy, virile race in spite of their small stature.

EXPLORING THE UNKNOWN



E.N.A.

A HUMAN FERRY

The porter not only carries the explorer's provisions, but the explorer himself on occasion. This is an instance where the native is invaluable, for it is difficult to know when these broad muddy rivers are sufficiently shallow to be crossed on foot. This is the Nicadgi river in Mozambique, East Africa. Diseases, such as malaria, seriously impede the white man.

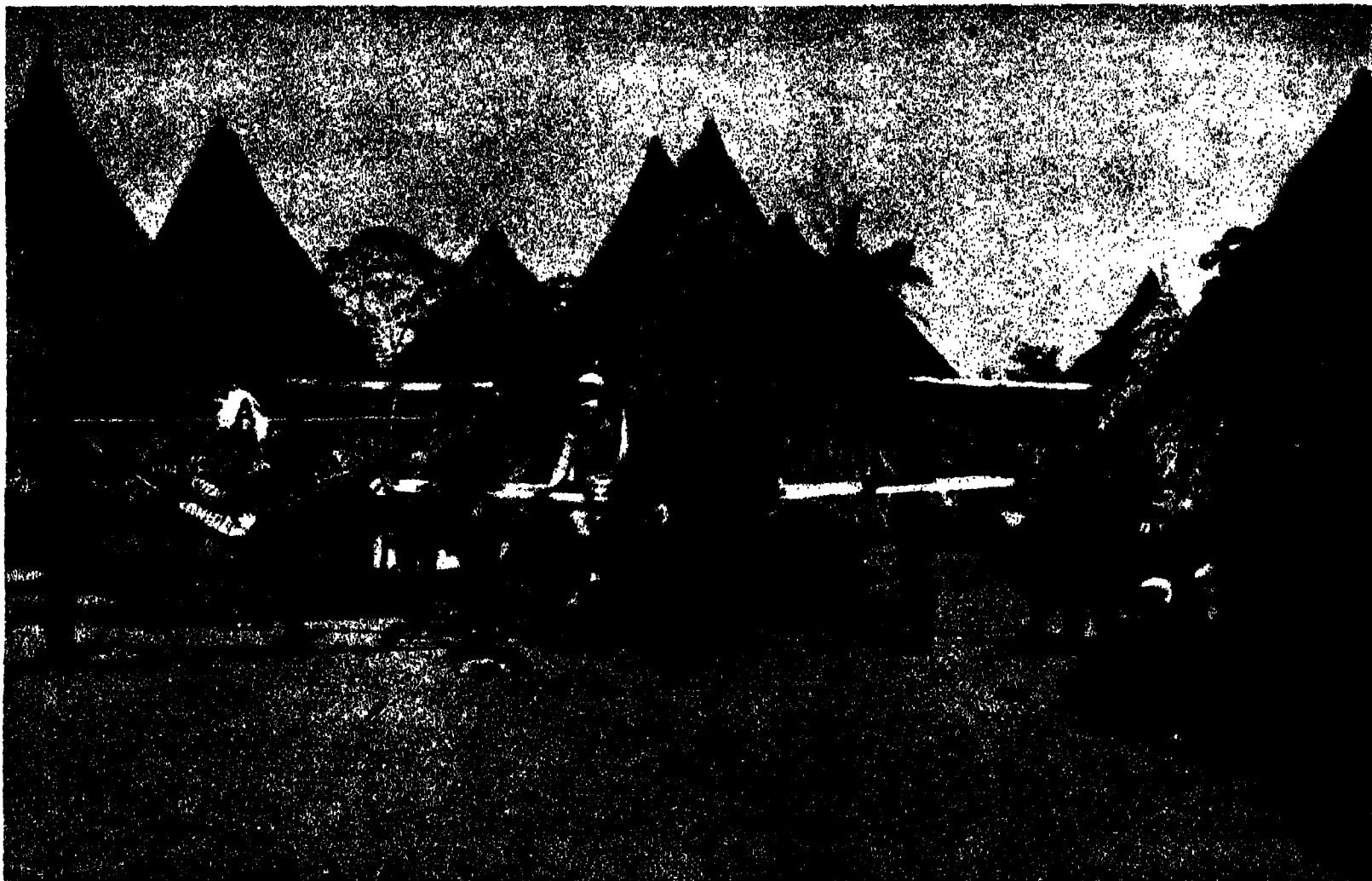


THE "CARRIAGE" OF A PIGMY RULER

Wide World

A chief of a dwarf tribe is carried on the shoulders of two men, whilst a maiden pigmy shades him with a banana leaf. Some of these native tribes may prove friendly, others may prove actively hostile, but the experienced explorer develops a wonderful technique for making friends with the natives. Treachery is rare once friendship has been established.

EXPLORING THE UNKNOWN



Wide World

THE NATIVES ASSIST THE WHITE MAN

This American explorer secured the valuable co-operation of the all-powerful witch doctor of a tribe in the forest of the Ivory Coast of Africa. His protection was invaluable, and he rendered the explorer a great service in the information he gave him concerning native religion and superstitions. He is seen on the left carried in a native hammock or "palanquin."



E.N.A.

JUNGLE REFLECTIONS

From Africa we follow the explorer to Papua in Malay, and here we find him on the Philip river amid the luxuriant growth, of the jungle. Strange creatures roam the jungle, and strange plants have their home there, and over all broods stifling heat.

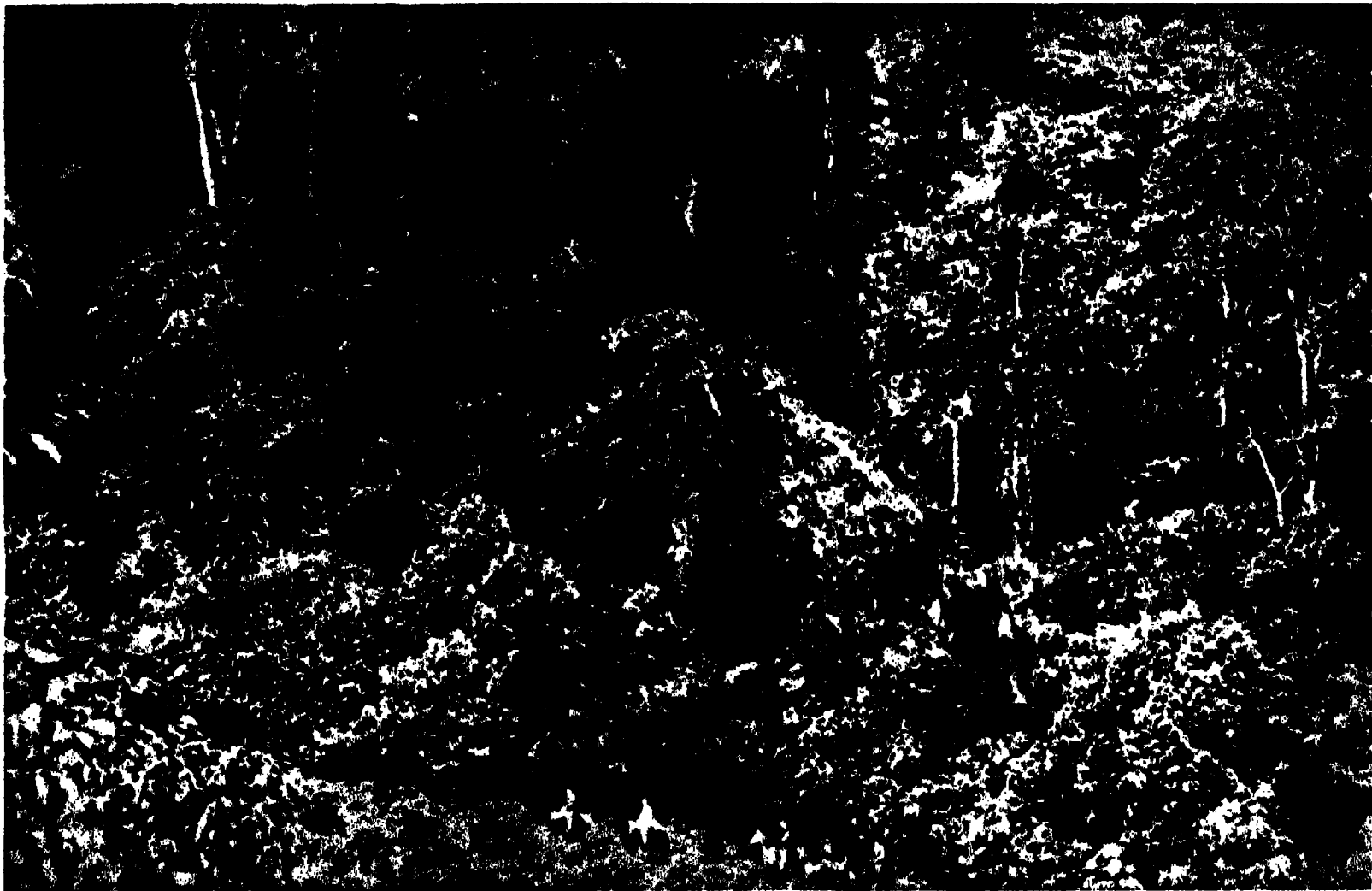


Wide World

A GIRL OF A "NEW" VENEZUELAN JUNGLE TRIBE

And now to Venezuela in South America, where an explorer confirmed the existence of a hitherto undiscovered tribe living in the jungle. This girl is wearing a bead apron, and her arms and ankles are bound with stuff to make them slender.

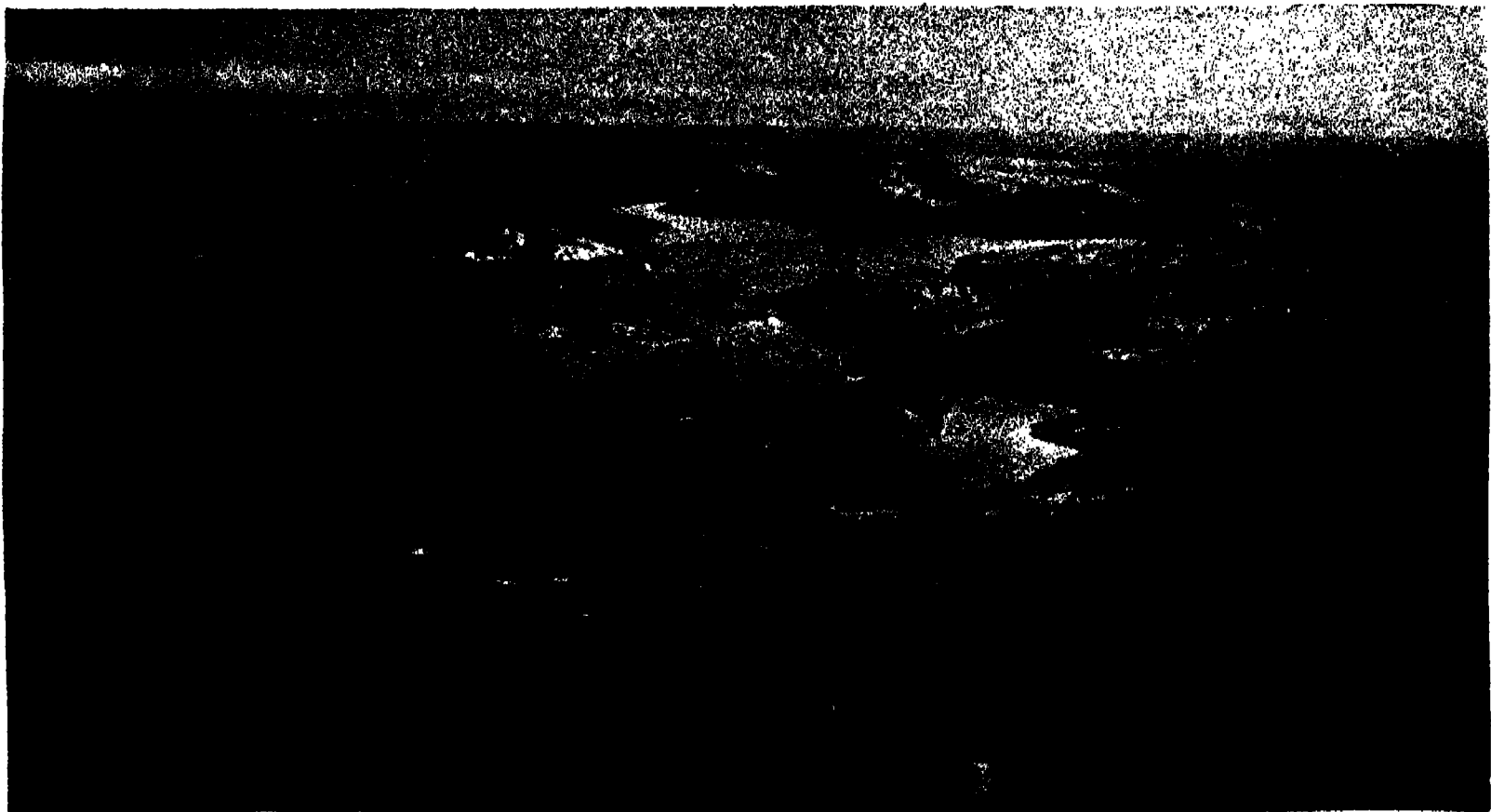
EXPLORING THE UNKNOWN



E.N.A.

A TROPICAL FOREST IN BRAZIL

Here we see a party of explorers on horseback looking like pigmies against the giant trees and tropical growth of a virgin forest. The explorer must proceed slowly and warily here, hacking a path through the dense luxuriant tropical growth.



Courtesy, Canadian Government

THE AEROPLANE AIDS THE EXPLORER

In the north-west territories of Canada are stretches of land, of which little is known. This photograph of Great Bear Lake was taken from the air. Such country is best mapped from air photographs, which are then pieced together.



Wide World

A DANGER SIGNAL ON THE OCEAN BED

Now we come to exploration beneath the surface of the ocean. A gorgeously coloured sea anemone lies in wait for unwary fish. The poisonous tentacles close round unfortunate victims, holding them tight until the anemone has consumed them.

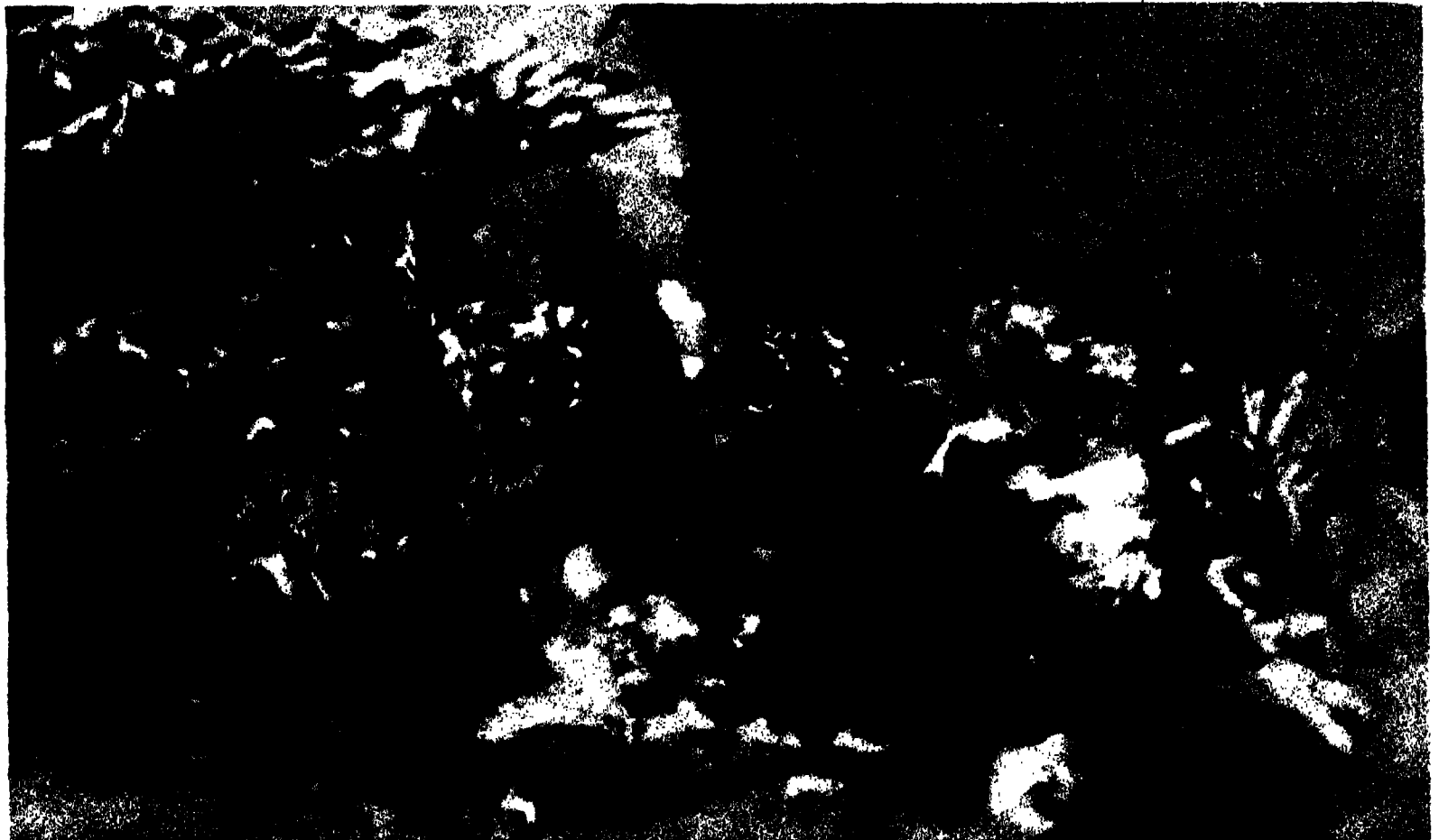
EXPLORING THE UNKNOWN



Wide World

A DIVER AMONG A FOREST OF CORAL

The camera reveals the mysterious beauties of the floor of the tropical seas, where strange corals form even stranger forests. This diver is scouting for a photographer who sits comfortably under the waves in a water-tight studio made of glass.



Wide World

IN THE SHADE OF A CORAL REEF

The diver rests on the floor of the ocean in a fairyland of coral. Coral, which is formed from the hard skeleton of tiny sea animals, is found extensively around the islands of the Mediterranean Sea, and also along parts of the coast of North Africa.



Wide World

GAILY COLOURED FISH AMID THE CORAL

A trio of blue parrot fish trail lazily in single file through the coral clumps. These fish have sharp, parrot-like beaks, which enable them to bite off the coral and other tough sea growths which form their food. They are brilliantly coloured.



Wide World

A GIANT CORAL TREE SPREADS ITS BRANCHES TO THE LIGHT

This coral tree spreads out its branches up to the light like the palms of human hands. Myriads of other corals grow around it, and through the mazes of this sea wood dart tropical fish of many hues. Such colours disappear in the open air.

EXPLORING THE UNKNOWN



Wide World

A DANCE OF DEATH IN THE DEPTHS OF THE OCEAN

In the deep seas off Samarang in the Dutch East Indies was staged a twenty-minute battle between a giant octopus with life crushing tentacles, and a man-eating tiger shark. The shark is about to strike at the octopus which is rising to avoid it.



Wide World

THE OCTOPUS IN THE SHARK'S CLUTCHES

The shark follows up the retreat of the octopus and, regardless of the deadly tentacles, fixes its teeth in the creature's body. This battle between two masters of the deep resulted in a victory for the shark. Many sharks kill for the sake of killing.



A MONSTER OF THE SEA MEETS HIS DOOM

Wide World

A man-eating shark has been hooked, but he is cunningly watching for a chance to bite or fight his way to freedom. Shark fishing is a thrilling pursuit, for the shark makes a fierce and determined fight for life. He is the terror of the ocean.

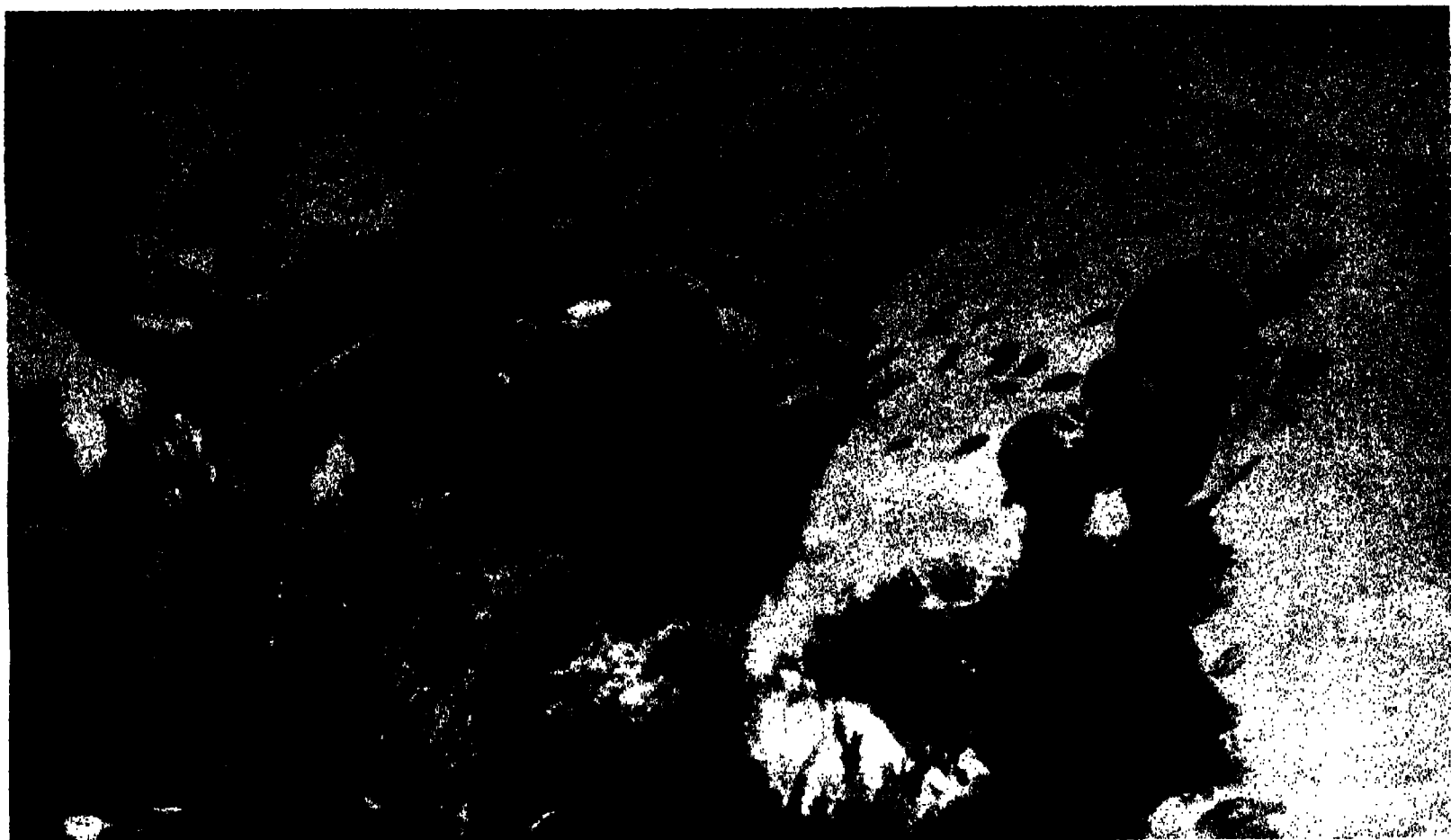


A FISH OF MANY COLOURS

Wide World

The "Grouper" fish is the chameleon of the ocean. As he nears the golden brown branches of the Palmate coral tan stripes appear on his body and against the hazy brown shadows of the coral he is very difficult to see. An instant later, in the deep shadows, he will turn completely brown, and be lost to sight. Land chameleons act in a manner very similar.

EXPLORING THE UNKNOWN



Wide World

LIKE BIRDS IN THE TREES

Through the branches of the coral forests dart myriads of coloured reef fishes—looking like flocks of birds among trees on land. But they live a precarious life compared with birds in the tree tops, for they fall a ready prey to bigger fish.

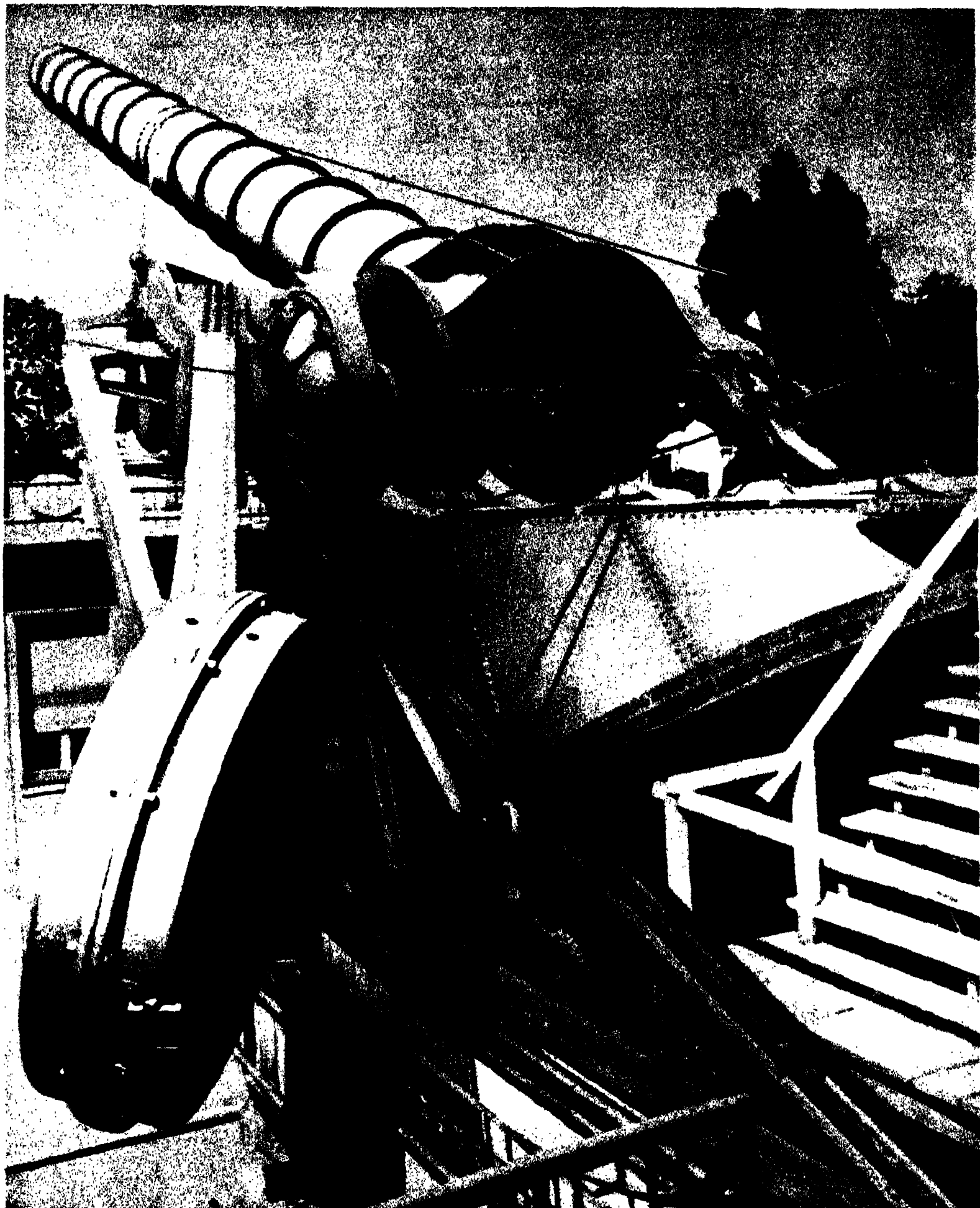


Wide World

LIVING GEMS IN THE GARDENS OF THE SEA

Brilliantly coloured gleaming tropical fish dart, like living jewels, in the warm waters of the tropical seas. Sharks and other enemies must be far away, or if perhaps lurking near, as yet unsuspected. Such are some of the mysteries of the deep.

MAN LOOKS AT OTHER WORLDS

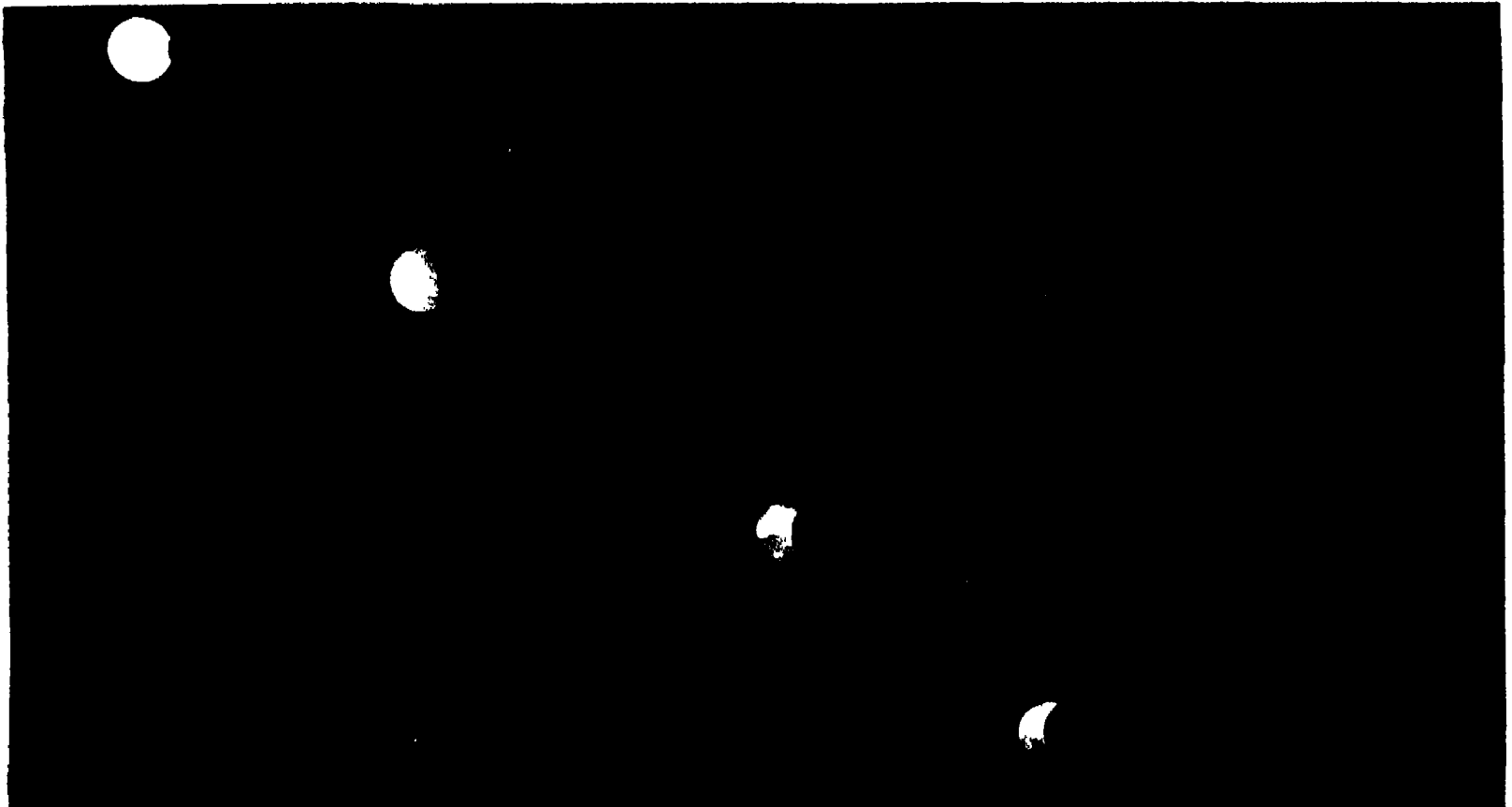


Wide World

SHOOTING INTO THE INFINITE

Man is not content merely to explore his own world. He turns his attention to the heavenly bodies and seeks to probe the mystery of the universe and the planets that swim into his ken. To bring the stars nearer him he has erected wonderful telescopes. Above is shown a picture of one of the largest telescopes in the world, at Berlin, resembling a giant field gun.

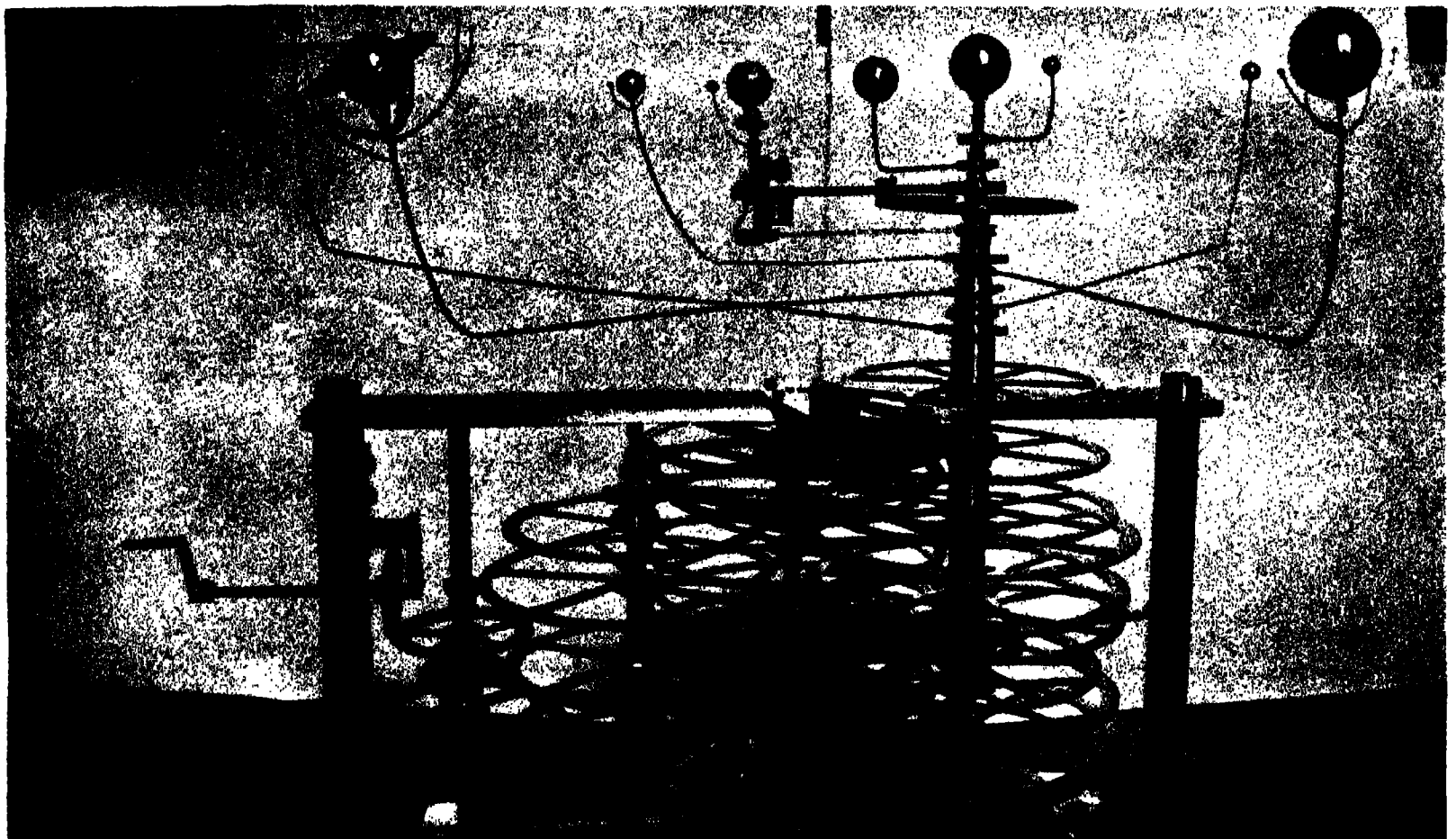
MAN LOOKS AT OTHER WORLDS



Associated Press

STAGES IN THE TOTAL ECLIPSE OF THE SUN

Photographs taken from New York where the eclipse was only partial at 4.34 in the afternoon on August 31, 1932. Stirring scenes were witnessed in Harlem, the negro quarter, where negroes fell on their knees in the streets imagining that the end of the world was near at hand.

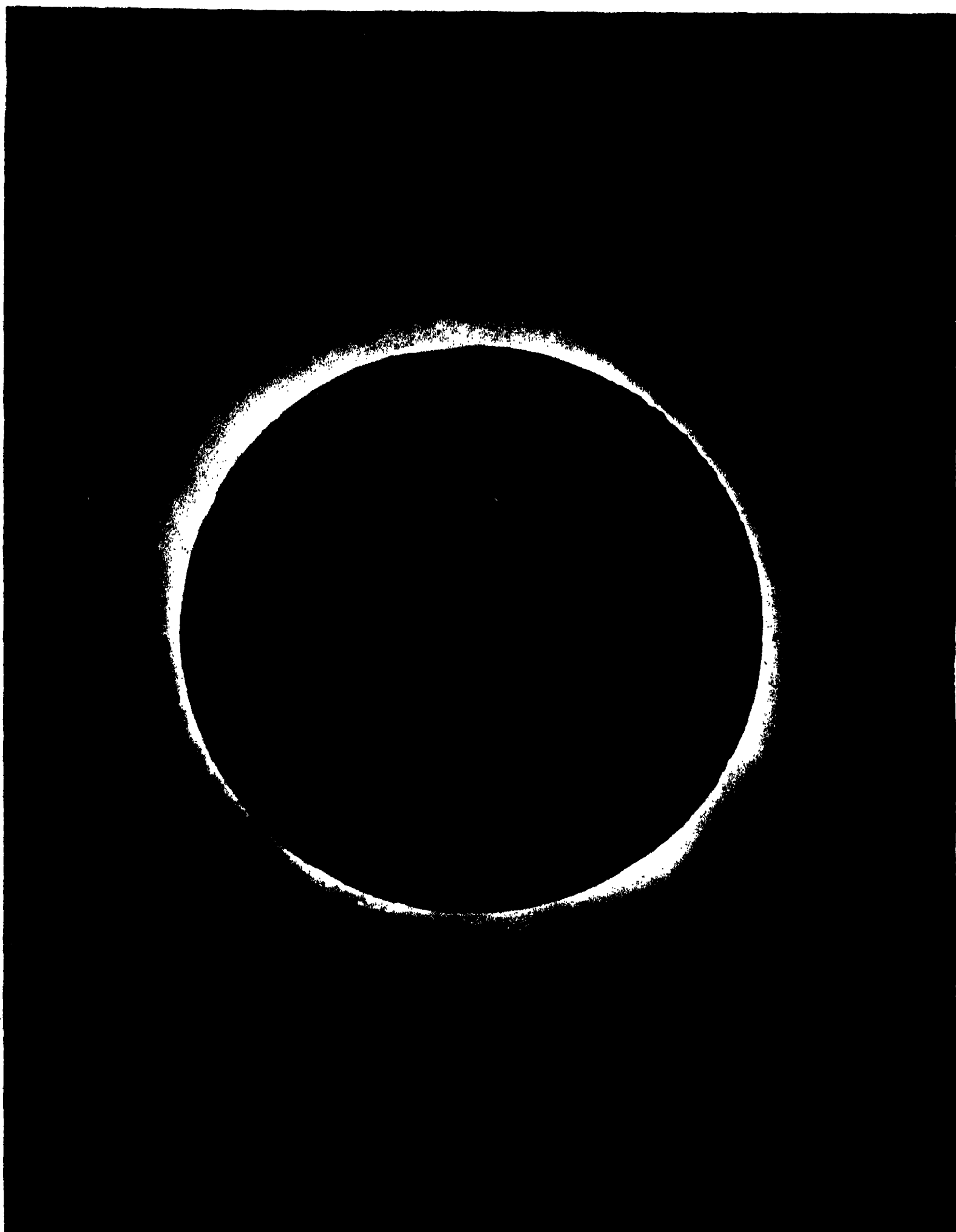


Wide World

HOW THE SOLAR SYSTEM WORKS

This model illustrates how the whole of the planetary system rotates round the sun, from which it derives its light and heat. Reading from the left to the right : Uranus, Saturn, Mars, the Moon, the Earth, Venus, the Sun, Mercury, Neptune, and Jupiter. As this machine was made before 1930 the existence of Pluto (see page 606) had not yet been confirmed.

MAN LOOKS AT OTHER WORLDS



THE TOTAL ECLIPSE OF THE SUN

Wide World

On March 9, 1931, the sun was totally eclipsed. This photograph was taken in Mexico by the Kioto Imperial Expedition which had travelled all the way from Japan to make observations. The picture shows the inner corona, the luminous haze which envelops the sun's gaseous covering, that is normally invisible owing to the brilliance of the sun's light.

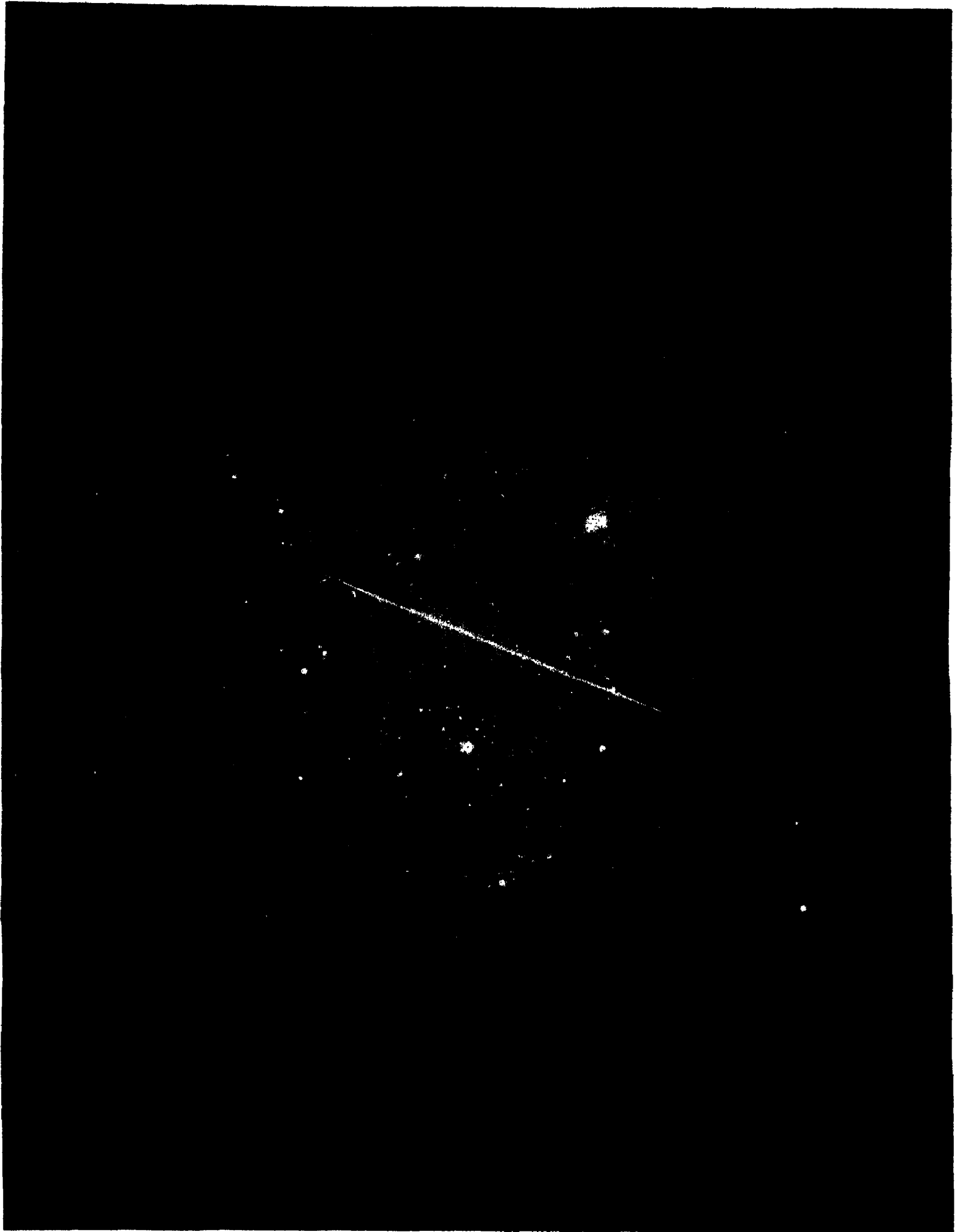
MAN LOOKS AT OTHER WORLDS



THE MOON BLOTS OUT THE SUN

Wide World

The Old Man of the Mountain at Franconia watches the total eclipse of the sun caused by the moon passing between it and the earth. The wonderful effect of the silver sheen and the deepening shadow suggests some fantastic fairyland.

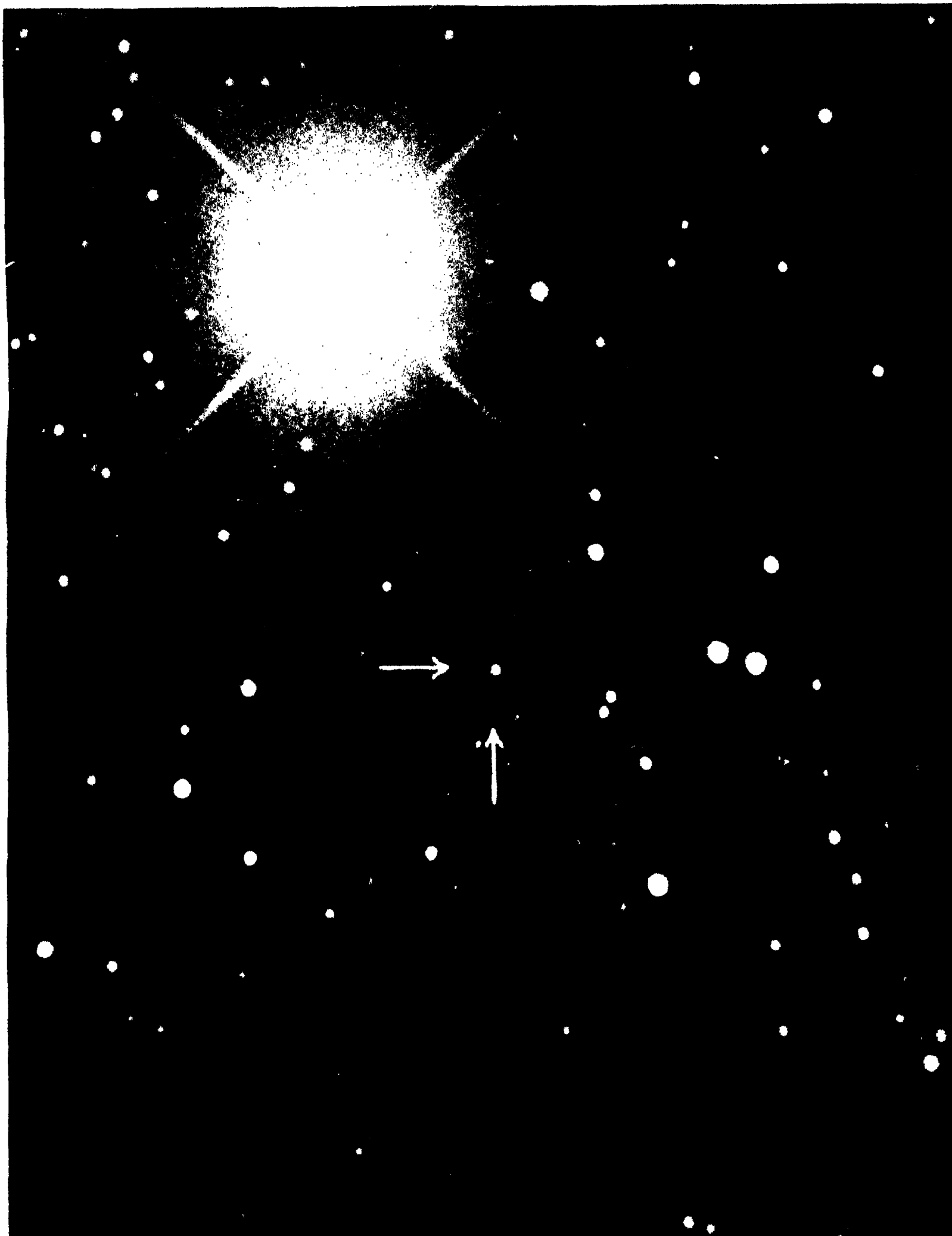


THE BRILLIANT FLASH OF A METEOR

Wide World

Above is a photograph taken from the Harvard College Observatory, Boston, U.S.A., of the path of a meteor flashing across the sky between the constellations of Taurus and Perseus. The Pleiades group is seen below the path of the meteor.

MAN LOOKS AT OTHER WORLDS



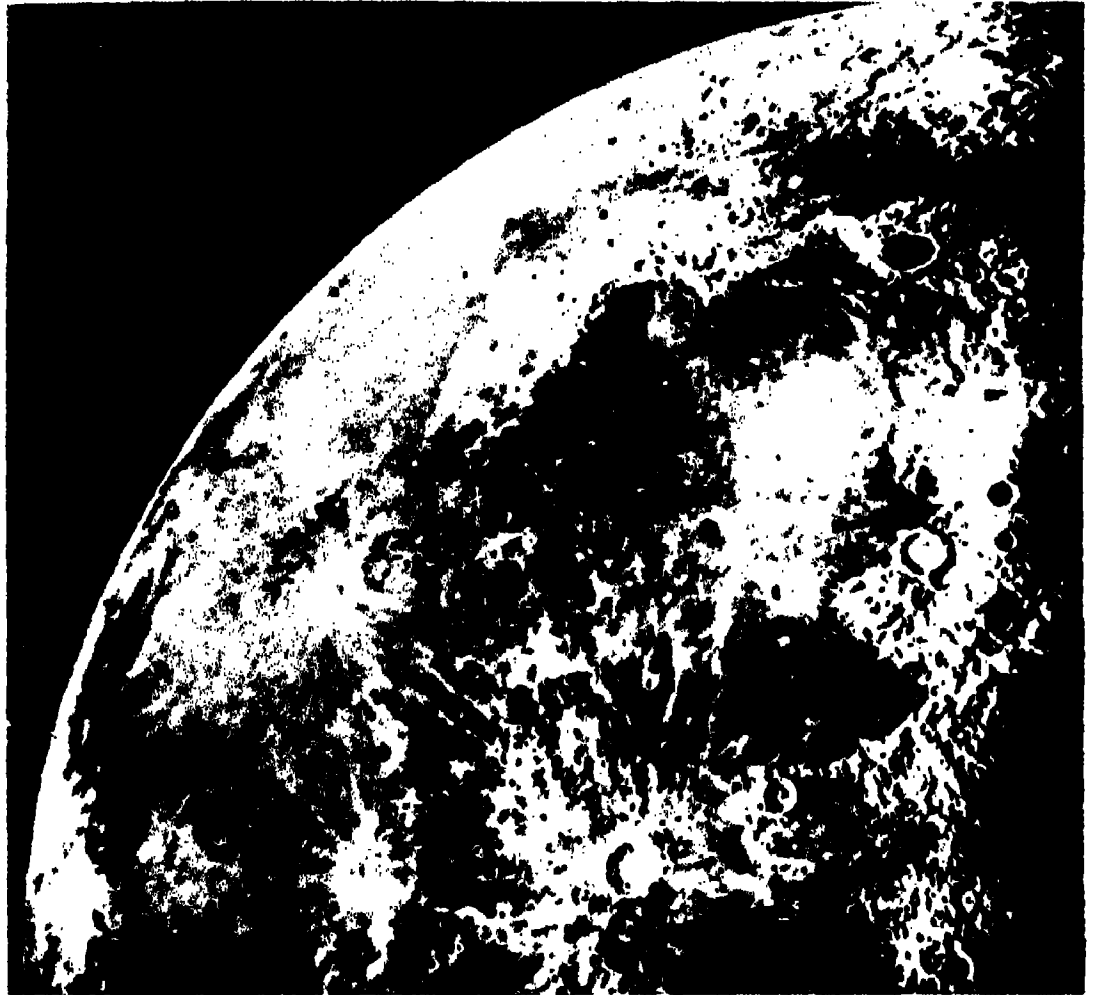
THE DISCOVERY OF PLUTO—A NEW PLANET

Wide World

The arrows indicate the heavenly body recently discovered from the Lowell Observatory in Arizona. The rate of its motion and its path amongst the cluster of surrounding stars showed clearly that it was a new member of our Solar system.

THE MOUNTAINS OF THE MOON

The moon is nearly a quarter of a million miles from the Earth, but this telescopic photograph gives us a very good impression of its mountainous surface scarred with craters, the latter showing that at some time there has been volcanic activity on the moon. The temperature of the moon is far too cold for life on it to be possible. Moreover, there is no oxygen. It is a world without life, lit by the reflected rays from the sun.



Associated Press

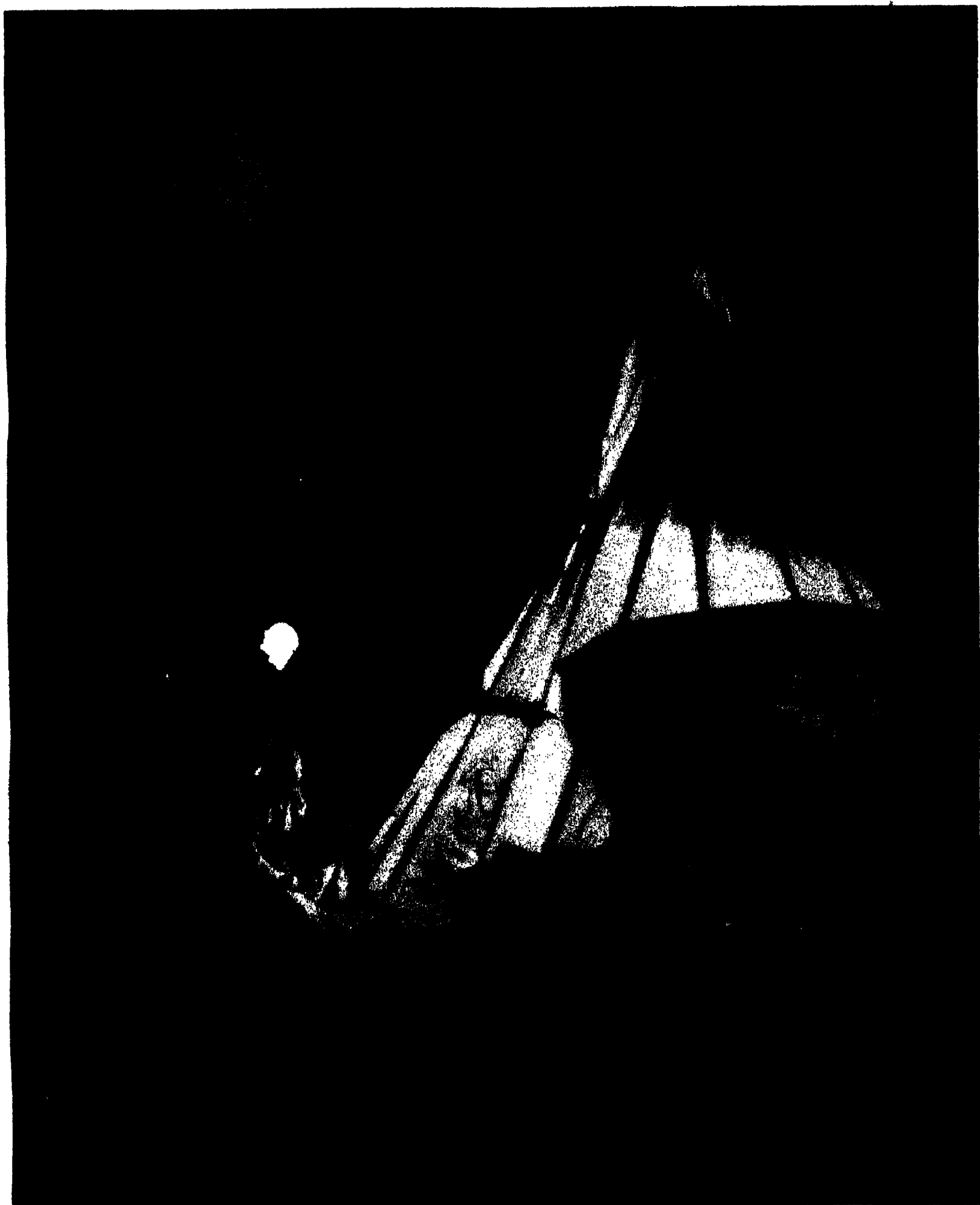


Associated Press

THE SHADOW OF THE MOON DURING ITS ECLIPSE

This aerial picture was taken 27,000 feet above the earth. Three minutes before the eclipse reached totality the clouds were pure white. The white streak was caused by the scattering of sunlight by dust and haze beyond the shadow. We are looking through the shadow above the clouds. Except for the white streak this shadow has darkened the whole of the picture.

THE BROTHERHOOD OF MAN



THE PIPE OF PEACE

G.P.A.

We have now reached the end of our story—a story which has shown man both highly civilised and in the lowest stages of barbarism. We have seen him at work, at play, and engaged in the arts. One is left with the impression that man in all climes is consciously or unconsciously striving towards an ideal—"Peace on Earth and Goodwill towards Men." This Indian, seated by his wigwam and smoking his pipe of peace, is a fitting reminder that the future progress of mankind lies not in mad annihilating warfare, but depends upon his ability to ensure that "Nation Shall Speak Peace unto Nation."

